TECHNOLOGY DEPARTMENT

TELEPHONE ENGINEER and MANAGEMENT

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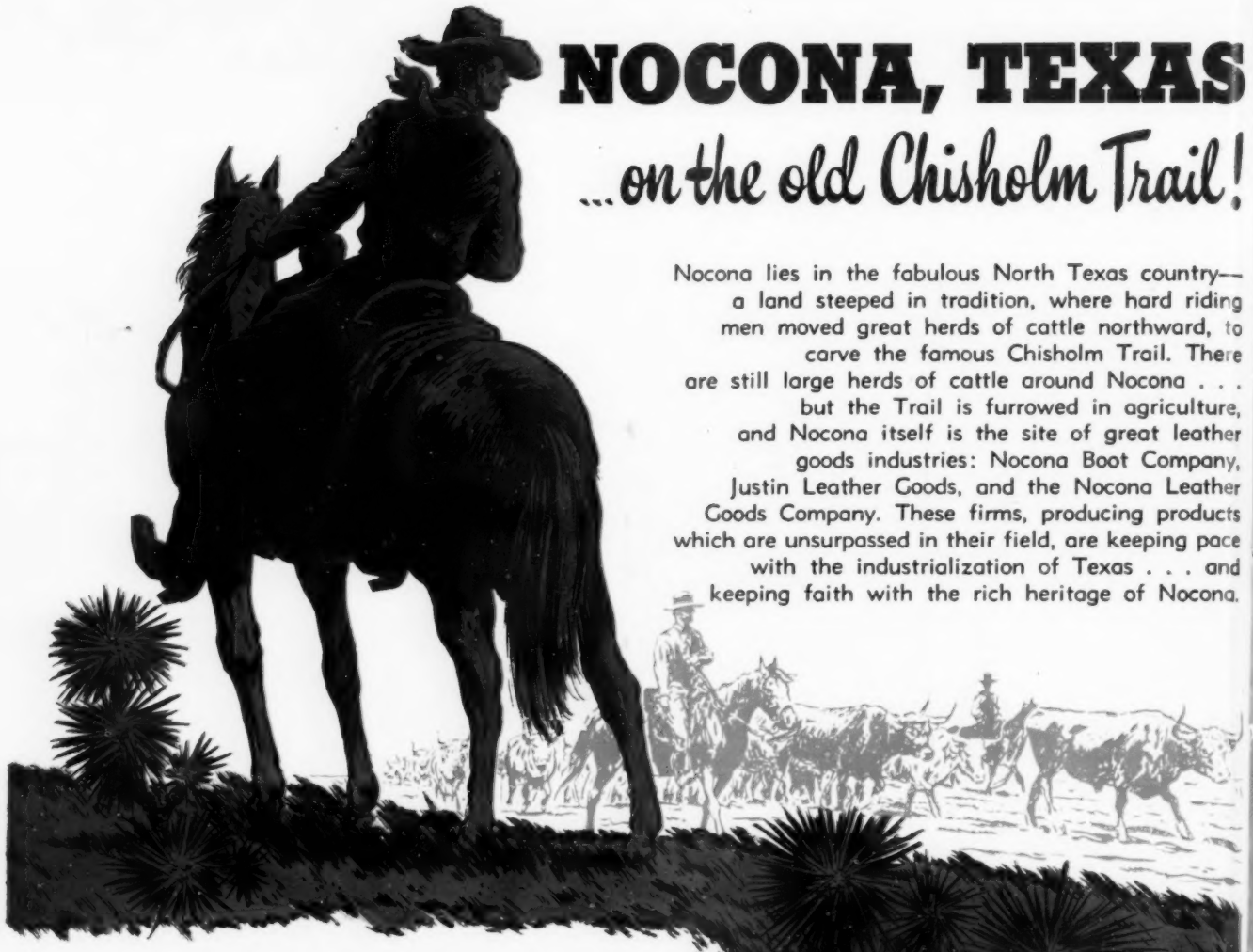
DETROIT

FEBRUARY, 1949

NOCONA, TEXAS

...on the old Chisholm Trail!

Nocona lies in the fabulous North Texas country—a land steeped in tradition, where hard riding men moved great herds of cattle northward, to carve the famous Chisholm Trail. There are still large herds of cattle around Nocona . . . but the Trail is furrowed in agriculture, and Nocona itself is the site of great leather goods industries: Nocona Boot Company, Justin Leather Goods, and the Nocona Leather Goods Company. These firms, producing products which are unsurpassed in their field, are keeping pace with the industrialization of Texas . . . and keeping faith with the rich heritage of Nocona.

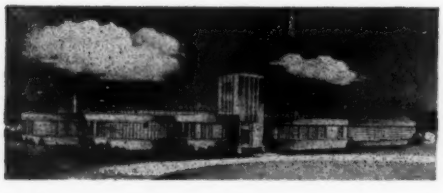


Leather Goods in Nocona are produced on a mass scale . . . for example—cowboy boots are on a production line basis—and at the same time each pair of boots is carefully and skillfully hand-lasted. It is entirely fitting that directories for the Nocona Telephone Company should be produced by the General Telephone Directory Company, for we operate on the same principle in producing telephone directories for over 1200 American cities and towns. By virtue of this large volume of directories, our representatives have developed a streamlined efficiency. At the same time, General Telephone Directory Company's success is based on "Tailoring" each directory to the problems and policies of each individual telephone company. As a result of this working procedure, the independent telephone companies whom we serve are now earning a considerably larger net advertising revenue than ever before, and at the same time are providing their communities with attractive, accurate directories. Please give us an opportunity to present our plan to you.

GENERAL TELEPHONE DIRECTORY COMPANY

Eastern Office: 185 North Wabash Avenue, Chicago 1, Illinois — Telephone STate 2-5478

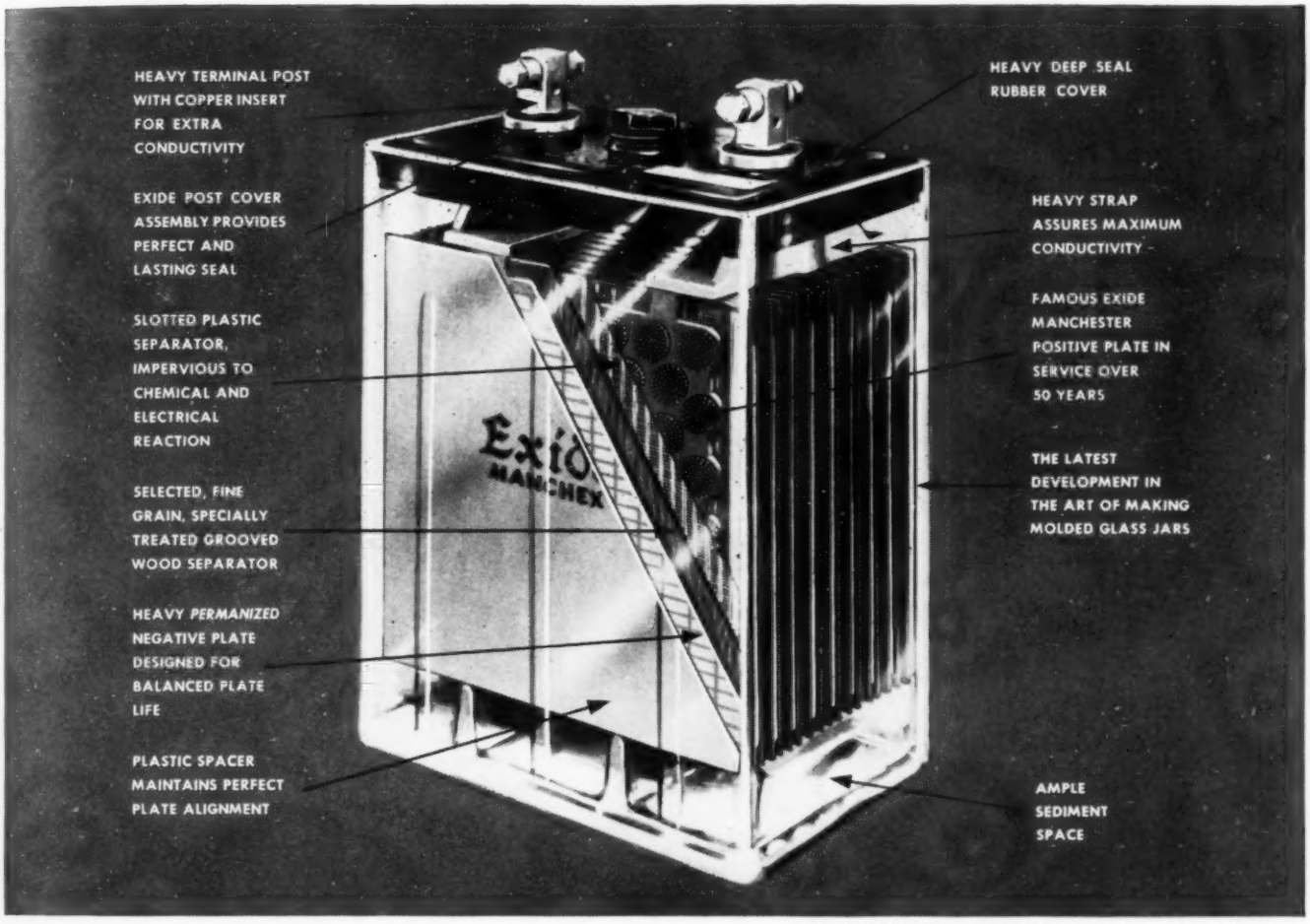
Western Office: Press-Telegram Building, Long Beach 12, California — Telephone 6-7221



LEFT: The new home of the world famous Nocona Boot Company, formally opened on June 9, 1948. Accompanying picture shows beautiful Nocona boots being checked by one of Nocona's master leather workers.

NEW-EXIDE-MANCHEX battery

for dependable TELEPHONE SERVICE


HEAVY TERMINAL POST WITH COPPER INSERT FOR EXTRA CONDUCTIVITY
EXIDE POST COVER ASSEMBLY PROVIDES PERFECT AND LASTING SEAL
SLOTTED PLASTIC SEPARATOR, IMPERVIOUS TO CHEMICAL AND ELECTRICAL REACTION
SELECTED, FINE GRAIN, SPECIALLY TREATED GROOVED WOOD SEPARATOR
HEAVY *PERMANIZED* NEGATIVE PLATE DESIGNED FOR BALANCED PLATE LIFE
PLASTIC SPACER MAINTAINS PERFECT PLATE ALIGNMENT
HEAVY DEEP SEAL RUBBER COVER
HEAVY STRAP ASSURES MAXIMUM CONDUCTIVITY
FAMOUS EXIDE MANCHESTER POSITIVE PLATE IN SERVICE OVER 50 YEARS
THE LATEST DEVELOPMENT IN THE ART OF MAKING MOLDED GLASS JARS
AMPLE SEDIMENT SPACE
Exide
MANCHEX

"Exide" and "Permanized" *Reg. Trade-Marks U. S. Pat. Off.*

One of its many exclusive features is the famous MANCHESTER POSITIVE PLATES with their unique lead button construction. The buttons—rolled strips of corrugated soft lead—are pressed into holes of the lead-antimony grid. Forming action expands the buttons and locks them securely in place. Only a comparatively small portion of the total lead is formed initially into active material . . . the balance is available for gradual conversion in service.

THE PERMANIZED NEGATIVE PLATES are constructed of a lead-antimony grid, or framework, with a series of vertical ribs connected by short horizontal bars. Bars are flush with plate surface . . . extend only part way through the plate . . . are staggered on opposite sides. The active material . . . sponge lead . . . is formed of vertical strips or ribbons that extend from top to bottom of the plate between the vertical ribs and is locked in place by the horizontal bars.

For dependability, long life and economy, use the EXIDE-MANCHEX BATTERY for all telephone battery requirements.

LONG LIFE...LOW MAINTENANCE COST...IMPROVED ELECTRICAL CHARACTERISTICS...INCREASED POWER (watt) OUTPUT PER UNIT OF SPACE...LESS WEIGHT PER AMPERE HOUR OUTPUT...ATTRACTIVE INSTALLATION

Exide
BATTERIES

1888 — Dependable Batteries for 61 Years — 1949

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32 • *Exide Batteries of Canada, Limited, Toronto*

IT SEEMS TO US...

ALLAN W. RYDER, executive secretary of the New York State Telephone Association, has resigned that position to accept a position as plant superintendent of three telephone companies with headquarters at Bangor, Penn. owned by the Gary Group Operating Telephone Companies. His resignation leaves another telephone association vacancy as the Michigan Independent Telephone Association is also preparing to select a full time secretary. A committee comprising of LOUIS H. MEYER, Johnstown, N. Y., MALCOLM GRISWOLD and DON W. WALKER, Phelps, and FRED S. FLORANCE, Monroe, N. Y. has been appointed by association president Wm. A. Seeley to receive applications and make recommendation to the board of directors for a successor to Mr. Ryder.

• • •

F. M. (RED) PARSONS, general sales manager of the Kellogg Switchboard & Supply Co., Chicago, supplemented his excellent address at the recent Minnesota convention by distributing a new booklet titled "Price Trends of Telephone Apparatus and Supplies—1926 to 1948". The 20-page booklet graphically depicts, by years, the actual costs on the major items used by the telephone industry. It was published by the Kellogg people as a good will gesture to the Independent telephone industry. The booklet is a valuable contribution at this particular time because of inflationary prices in our present economy.

• • •

Each year the Minnesota Telephone Association holds their annual convention in January. It has become the "pacesetter" for the many state telephone conventions held throughout the year. The meeting just held had an attendance of 462 at their banquet despite heavy snow and adverse weather conditions. It would appear that succeeding conventions will be well attended as this usually happens when the Minnesota gathering is a large one. As far as we are concerned we give full credit for the large attendance to the excellent program presented by Jack Crowley.

The National Telephone Magazine

TELEPHONE ENGINEER and MANAGEMENT

FEBRUARY, 1949 **VOL. 53, NUMBER 2**

Editor, RAY W. SMITH • *Advertising Director*, ROY F. SMITH
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COVER: "I want to be a telephone operator," says Renee Lue Becker, seated in "Central's" spot before the Northwestern Bell switchboard, Bemidji, Minn. Renee Lue is one of a group of fifth graders photographed in the Bemidji offices of the Northwestern Bell Telephone Co. as they were making a tour of the building.—(Picture by Photo North: Courtesy of Bemidji (Minn.) Daily Pioneer.)

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POWERS line construction and maintenance bodies

Your workshop on wheels

On the rough, tough jobs miles from home a POWERS Body makes completion of the job easier. Built and designed to meet field requirements, all the necessary accessories, tools, supplies and equipment are ever-handy for instant use... for any problem. Sturdy, all-steel construction provides unwavering, dependable service year-in, year-out, through all kinds of weather, over all kinds of terrain. For complete information write...

ALL-STEEL POWERS PUBLIC UTILITY BODIES

McCABE POWERS AUTO BODY CO.

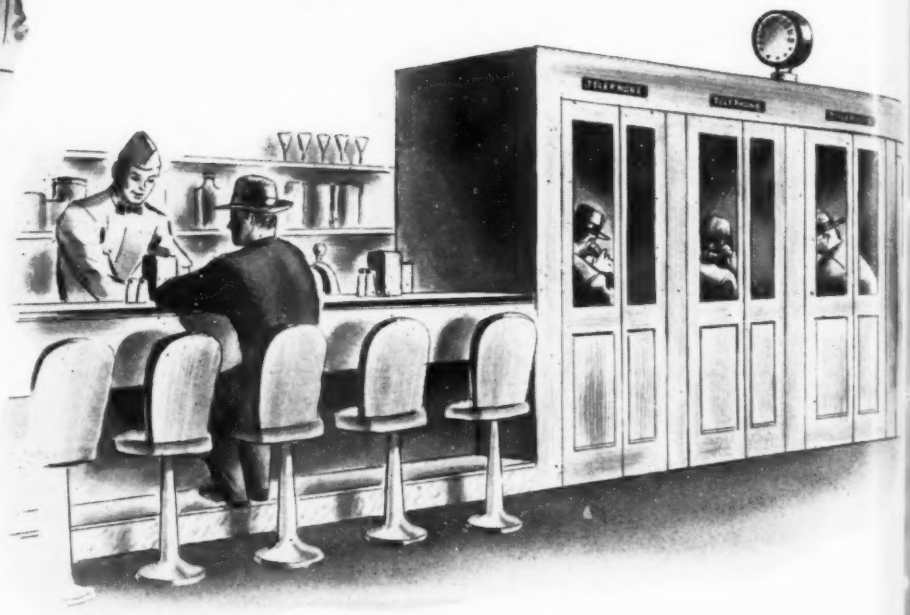
5900 N. BROADWAY • ST. LOUIS 15, MO.

OVER 75 YEARS EXPERIENCE

THIS-

Every "borrowed" call represents lost income.

OR THIS?



Batteries of paystations like this are producing substantial revenues for many telephone companies.

Autelco-Gray PAYSTATIONS...*SAVE LOST INCOME*

One of the "60" series types of Autelco-Gray Paystations.

When you install paystations for convenient use by the public, you convert "borrowed calls" into immediate operating-company income. Telephone users invariably prefer the privacy of paystations and are glad to pay for their convenience.

Provide enough paystations in drugstores, hotels, bus stations and other public places, to save this otherwise lost income. It will add substantially to your revenue.

AUTOMATIC ELECTRIC

Originators and Developers of the Strowger Step-by-Step "Director" for Register-Sender-Translator Operation . . . Machine Switching Automatic Dial Systems

Makers of Telephone, Signaling and Communication Apparatus...Electrical Engineers, Designers and Consultants

Distributors in U. S. and Possessions

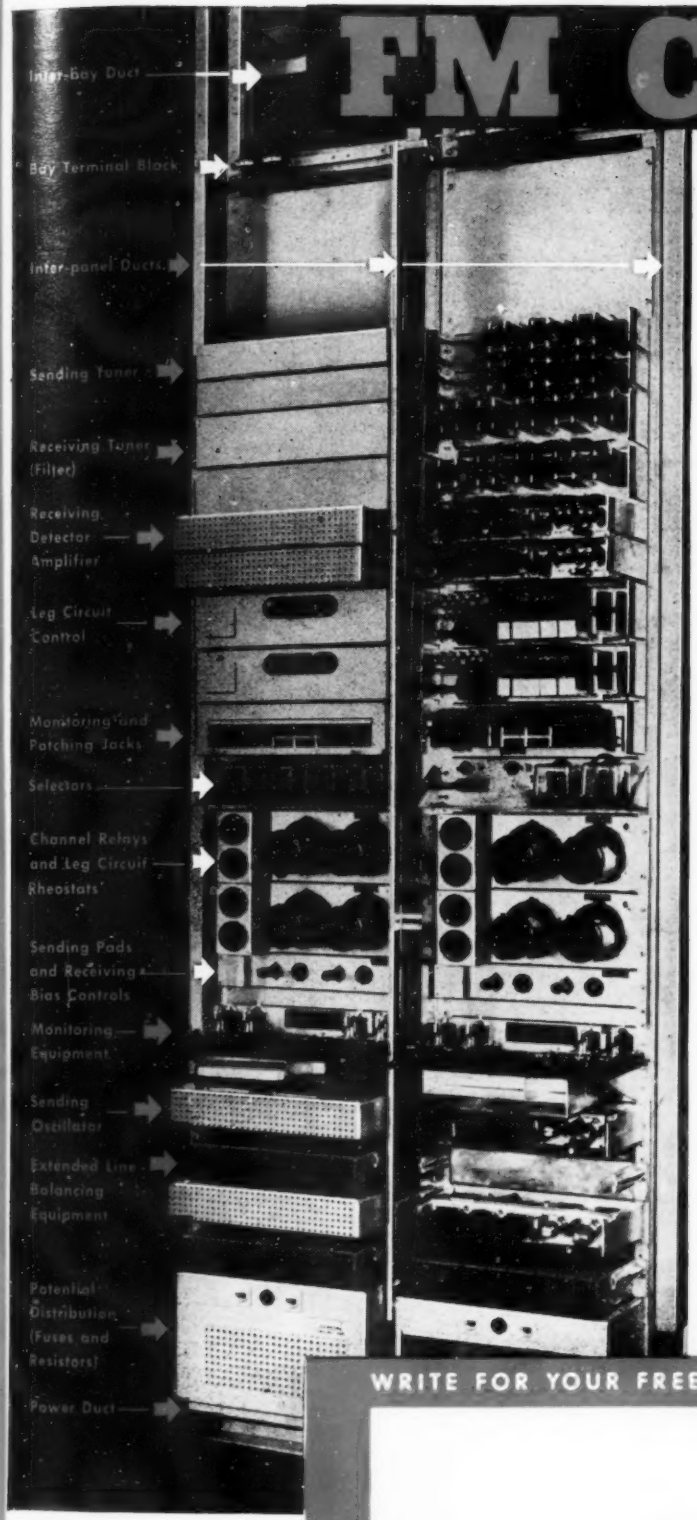
AUTOMATIC ELECTRIC SALES CORPORATION, 1033 W. Van Buren St., Chicago 7, U. S. A.

Export Distributors: INTERNATIONAL AUTOMATIC ELECTRIC CORPORATION

AUTHORIZED AGENTS FOR AUTELCO-GRAY PAYSTATIONS

Automatic Electric Sales Corporation . . . Graybar Electric Company . . . Kellogg Switchboard & Supply Company . . . Leich Sales Corporation . . . The North Electric Mfg. Company . . . Stromberg-Carlson Company.

FM CARRIER



TELEGRAPH EQUIPMENT FOR IMPROVED TRANSMISSION

SUPERIOR PERFORMANCE

Provides a 10 db advantage over AM carrier with respect to interference from such sources as cross-talk, power line induction, etc. Unbiased operation against wide variations of signal level.

INCREASED FACILITIES

Voice-frequency telegraph carrier coordinates with group modulators, designed for use with this equipment, to provide frequency translations of groups up to 31 KC.

GREATER FLEXIBILITY

Readily coordinated with a wide variety of DC leg facilities. Can be integrated with most types of telephone carrier systems. Jack arrangement makes switching between circuits quick, simple. Standard and high-speed channels.

LASTING DEPENDABILITY

Rugged construction assures uninterrupted, dependable service. Designed—and proven under exacting operating conditions — for long service with a minimum of maintenance.

EASY MAINTENANCE

All assemblies easily accessible for inspection, service and maintenance.

For Quality Equipment to Meet Your FM Carrier Requirements—Call On BUNNELL

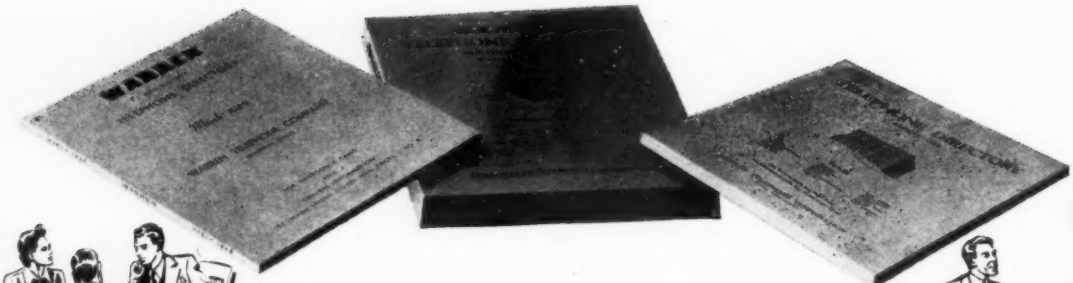
WRITE FOR YOUR FREE COPY OF THE *NEW* BUNNELL CATALOG

J. H. BUNNELL & Co.

215 FULTON STREET NEW YORK 8, N. Y.

BUNNELL

a key word in communications equipment ➡ Research, Engineering, Production and Testing facilities for equipment for: Wire Lines • Submarine Cables • Railroad Communication • Radio Airway Systems Municipal Signaling • Army and Navy Signaling • Carrier Current • Automatic Telegraph • Facsimile

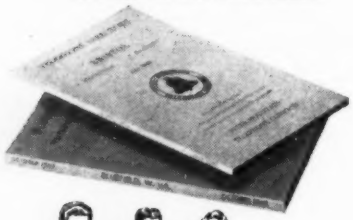


TELEPHONE DIRECTORIES

tailored to your requirements

1. PLANNING — Each BERRY sales canvass is carefully planned before a single call is made. Prospects are listed on cards and assigned to salesmen by areas. No sale is overlooked.

2. SELLING — Well-trained and supervised BERRY salesmen plan each call in advance . . present layouts and copy . . . show all prospects the benefits of directory advertising.

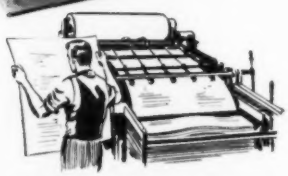


3. COMPILING — BERRY compilation units are the last word in accuracy as they draw up ad schedules, check alphabetical and classified manuscripts, etc.

L. M. BERRY & CO.

Directory Advertising Exclusively

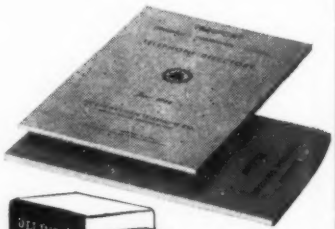
4. PRODUCING — After ads are sold, skilled BERRY production personnel follow through on artwork, cuts and type . . . and proofread ads.

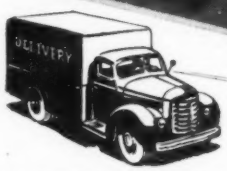


5. PUBLISHING — BERRY representatives can arrange for the complete printing and binding of telephone directories.

Call on L. M. BERRY & CO. — for the complete Planning and Selling of your "YELLOW PAGES" advertising . . . and for any other service needed in the production of a successful telephone directory. We will fit our experience to your needs:—develop a program that yields highly desirable operating revenue from directory advertising. And most important, BERRY salesmen are trained to maintain sound and friendly public relations while making maximum sales to your valued customers.

FOUNDED IN 1910, L. M. BERRY & CO. TODAY SERVES OVER 180 INDEPENDENT AND BELL TELEPHONE COMPANIES IN MORE THAN 4000 CITIES AND TOWNS IN 24 STATES.





6. DISTRIBUTING — BERRY men can consult and give advice on the best way to deliver telephone directories.

L. M. BERRY & COMPANY • Hulman Building • Dayton 2, Ohio • Michigan 7421 • L. D. Loop 16

14 BRANCH OFFICES: Birmingham, *Alabama* • Bristol, Chattanooga, Knoxville, Memphis and Nashville, *Tennessee* • Harrisburg, *Pennsylvania* • Jackson, *Mississippi* • Louisville, *Kentucky* • Milwaukee, *Wisconsin* • New Orleans, *Louisiana* • Rochester, *New York* • Tampa, *Florida* • Warsaw, *Indiana*

Berry Representatives Sell Advertising for more Telephone Directories than any other Company.

NOW! More Channel Miles per $

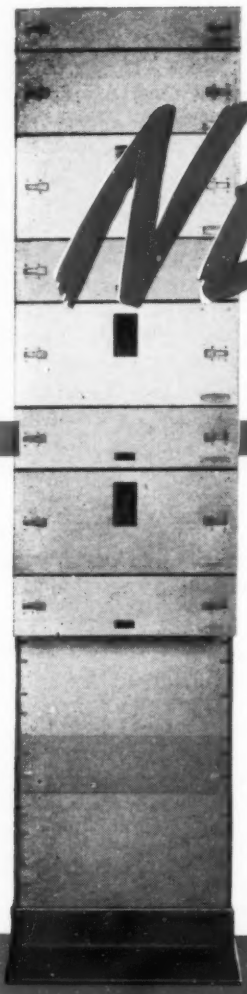
WITH THE

NEW Lenkurt

TYPE 33

(3 CHANNEL)

CARRIER TELEPHONE SYSTEM



$2589.00

for standard ("s") frequency non-regulated 3-channel terminals—factory wired and assembled. Inverted (x) frequencies (prevent inter-system crosstalk) are slightly higher (Price applies to continental U.S.A. only)

Here is a low-cost, medium-range carrier telephone system of 1, 2 or 3 channels—using frequencies which will coordinate with all standard carrier systems. It will "prove in" on circuits as short as 5 or 10 miles, and carry up to 250 miles without repeaters.

With Lenkurt Type 33, you can install three channels at once, or install one or two now, and the others as needed. Or, you can add the two higher-frequency channels to lines already equipped with Lenkurt 12A, 12B or 10G or similar single-channel systems of other manufacture. Its duplex carrier-frequency signaling equipment is adaptable to any type of signaling, and convertible to dial operation any time by changing a "plug-in" relay. Electronic pilot-channel regulators, which automatically compensate for attenuation changes over a broad 14 db. range, are available for the two higher frequency channels.

Find out just how little it will cost you to provide the best in carrier telephone service. Write Now!

OPERATING DATA:

Channel Number	Carrier Freq. Band	Range under average line conditions	
		Without repeaters	With repeaters
1	4-11 kc	150-250 miles	450-750 miles
2	13-23 kc	125-200 miles	300-525 miles
3	25-35 kc	90-150 miles	225-375 miles

RECOMMENDED AND DISTRIBUTED BY

AUTOMATIC ELECTRIC
SALES CORPORATION

1033 W. VAN BUREN ST., CHICAGO 7, ILL.

Free Literature Department

New Product Literature of Practical Interest

All literature described in this department may be obtained by sending in the handy blank at the bottom of this page.

BOOKS: A free copy of the complete new 1949 catalog of technical books "Let's Look It Up" is now available on request. This catalog describes in detail the books of the Reinhold Publishing Corp. including all American Chemical Society Monographs. It covers the latest books in the fields of Agricultural Chemistry, Biochemistry, Chemical Engineering, Industrial Chemistry, Colloid Chemistry, Drugs and Medicine, Fats, Oils and Waxes, Food and Nutrition, Metallurgy and Metalworking, Organic Chemistry, Paint, Varnish and Ink, Petroleum, Physics, Plastics, Rubber and Gums, Textiles and such process industries products as Cement, Glass, Leather, Paper, etc.—*Request FL* 256.

CARBON RESISTORS:—An 8-page catalog is ready for distribution by Welwyn Electronic Components, Inc., covering technical data and complete price schedules on Welwyn High Stability carbon resistors, and Welwyn Pyromatic resistors. Engineering data on the construction, tolerance and range, stability, as well as temperature and voltage coefficient are included, together with statements on the very low noise and reactance to be anticipated from the use of these components. Engineers interested in the design of quality apparatus, wherein stability of the resistor components is an essential prerequisite of good engineering practice, will find this brochure of great interest.—*Request FL* 257

FLOOR REPAIRS:—"One-Two-Three" . . . that is how easy it is to repair ruts and holes in your floors with Stonhard Stonfast. Also, that is the title of the latest Stonfast folder just off press. It tells you how you can make your floors smooth and safe in three easy steps. *Request FL* 258.

GALVANIC CELL CORROSION: Reasons for galvanic cell corrosion, as well as methods for helping to overcome it, are contained in a new booklet issued by The International Nickel Company's Corrosion Engineering Section. The booklet is complete in all engineering details and includes drawings and other essential illustrative material. Its seven and one-half pages are designed to provide the production man as well as the engineer with brief but informative material, based on more than forty years of study into this and other phases of corrosion.—*Request FL* 259.

SAFETY: *New Publications*:—1949 Directory of Occupational Safety Posters. Prepared by the National Safety Council. A 72-page directory containing 744 illustrations of two, three and four color posters, classified under 15 sections. A convenient index that quickly locates posters on specific accident hazards. Posters range in size from 8½ x 11½ inches to 10 x 12 feet. May be obtained direct from National Safety Council, 20 North Wacker Drive, Chicago 6, Ill. Price 50 cents.

SOLDERING MANUAL:—The Kester Solder Co. has announced publication and release of a new 28-page technical manual entitled "Solder and Soldering Technique." The manual affords a complete analysis of the properties and application of soft solder alloys and soldering fluxes. *Request FL* 260.

STABLE F-M TELEGRAPH SYSTEMS: Stability, margin, and range for teleprinter and multiplex applications are listed as prominent features of the Lenkurt Type 22 Telegraph System described in a new folder. Form 22P4. This publication illustrates the arrangement of a single channel of the equipment. *Request FL* 261.

TWECO PRODUCTS:—A new 12 page "Twecolog," Form No. 7, illustrates the complete line of Twecotong and Hol-Grip electrode holders, Redhead ground clamps, cable connectors, terminal connectors, cable splicers, Twecolugs and carbon electrode holders. New six bracket quantity price schedule and parts information is included. Contains valuable information about the maintenance of electric welding cables, connections, grounds and holders. *Request FL* 262.

TELEPHONE ENGINEER PUBLISHING CORP.
7720 North Sheridan Road
Chicago 26, Illinois

Please forward the following literature described in the Free Literature Department of the February, 1949 issue of TELEPHONE ENGINEER and MANAGEMENT: (Check information desired)

FL 256.....FL 257.....FL 258.....FL 259.....

FL 260.....FL 261.....FL 262.....

Name ..... Title .....

Company: .....

Street Address: .....

Town: ..... Zone:..... State:.....

Barber-Greene

720 Ditcher

For digging trenches 8" to 11" wide—up to 4 feet in depth. Digging speeds up to 32 F.P.M.; traveling speeds as high as 234 F.P.M. adjustable spoils conveyor discharges on either side. Three-position boom adjustable to dig close to obstructions. Simple B-G controls, easy-steering.

Two great new ditchers in the B.G. line!

These two new ditchers bring exclusive, time-proved B-G advantages . . . the B-G Vertical Boom that digs straight down, leaves no ramp . . . close-spaced, self-cleaning buckets that *cut*, like a milling machine, into toughest ground . . . the patented B-G overload Release for greater protection . . . *plus* special features for their types of service.

710 Ditcher

Digs trenches 5½" wide up to 42" deep. Digging speeds up to 32 F.P.M.; travel speeds up to 234 F.P.M. Vertical three-position boom digs close to obstructions. Cable-laying attachment available to feed cable and plow over the spoil in one continuous pass.

89

Ask your Barber-Greene distributor for full details on the B-G Ditcher which interests you — or write to Barber-Greene Company, Aurora, Illinois.

BARBER · GREENE COMPANY · AURORA, ILLINOIS

Constant flow Equipment

LOADERS · PERMANENT CONVEYORS · PORTABLE CONVEYORS · COAL MACHINES · BITUMINOUS PLANTS · FINISHERS · DITCHERS

Improve Your Service

"A"

For example, here's a telephone man having a pleasant, normal conversation over one of his "A" Masterphones. Its high-quality anti-sidetone circuit allows him to hear his own voice at normal volume, then sends the transmission gain of the telephone over the line. This circuit prevents local surrounding room noises from being amplified in his receiver and thus avoids disturbing the reception of the voice he's listening to. And the efficient transmitter and receiver provide easier understanding and naturalness. (PS: His subscribers are well satisfied with this excellent service too. Buying Kellogg 1000 Series Masterphones insures their staying happy.

...with "A" Phones!

Top-grade Instruments Assure Subscriber Good Will and Maximum Effective Transmission

"B"

Of course, if he talked over a "B" telephone like this under the same conditions, he probably wouldn't hear his party quite so well. This instrument does have an anti-sidetone circuit, but the resonant transmitter and receiver restrict its use to lines shorter than the limiting loop, and locations where noise is not too high in volume. (PS: He'd know that his subscribers would have the same trouble. Therefore, he'd zone this instrument to subscriber installations where it would give the most satisfactory service.)

"C"

if he used this "old reliable" of earlier days, he'd find it picks up every sound directed into the transmitter. This noise is amplified for transmission and also causes considerable annoyance in the receiver of the transmitting instrument. (PS: He'd know that this "C" instrument is hypersensitive at particular voice frequencies and inefficient at other voice frequencies. So he'd restrict its use to inner-most zones and locations where surrounding noise is moderate.)

Kellogg 1000 Series Masterphones are rated as "A" instruments because they provide all the modern transmission qualities, features and advantages. These attractively-styled telephones are well known for their operating dependability, finer transmission, reception and dependable ringing. They give you:

Advantages like the elimination of soldering and complex color codes in circuit wiring. And the single baseplate that allows changes from wall to desk or different types of circuit applications.

Features such as the universal "plug-in" coil and condenser, and the simple, slide-link switches that change condenser capacity and induction coil control. These up-to-date features make installation and maintenance unbelievably quick and easy.

Get the full story on how 1000 Series Masterphones improve effective transmission. Contact Kellogg *today!*

KELLOGG SWITCHBOARD AND SUPPLY COMPANY

MASTERPHONE

6650 SOUTH CICERO AVENUE • CHICAGO

Successful INDEPENDENT TELEPHONE MAN Says:

A. E. HENRY,
Illinois Allied Telephone Co.,
Princeton, Illinois

"We are proud to be a customer of Keilogg Switchboard and Supply Company and deeply appreciate their everlasting friendship and fine service."

Save on Battery Replacements! Ray-O-Vac Dry Cells are ideally suited for telephone work because they're especially designed to resist deterioration when not in use. An internal protective coating, developed by the RAY-O-VAC COMPANY, extends their useful life. Means fewer replacements, fewer batteries to buy, lower maintenance costs!

Guard Against Overstrain and wire service failures caused by wind, sleet and snow, with the Dillon Dynamometer. With it you can register in pounds the exact load in wire, messenger or guy strand. A product of W. C. DILLON & CO., INC., it helps prevent devitalization of wires due to overstrain. Small, lightweight and easy-to-use.

EASIER ORDERING *for* PROMPT HANDLING QUICK SHIPMENTS

...send your next order to KELLOGG

When you order from Kellogg, you fill out just ONE order form for *all* your line supplies. Saves you time and work! Then your order gets prompt attention by experienced telephone men. No chance for slip-ups here! Finally, we ship quickly, from the distribution point nearest you. It's fast, sure service, and every item is *guaranteed!*

For Service from a Nearby Distribution Point, Order Your Line Supplies from:

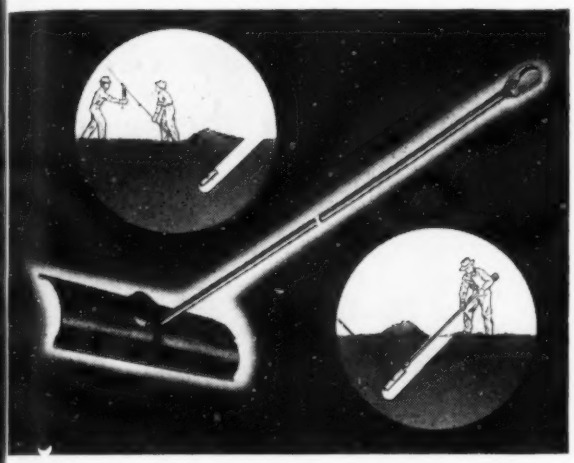
KELLOGG SWITCHBOARD AND SUPPLY COMPANY

SUPPLIES

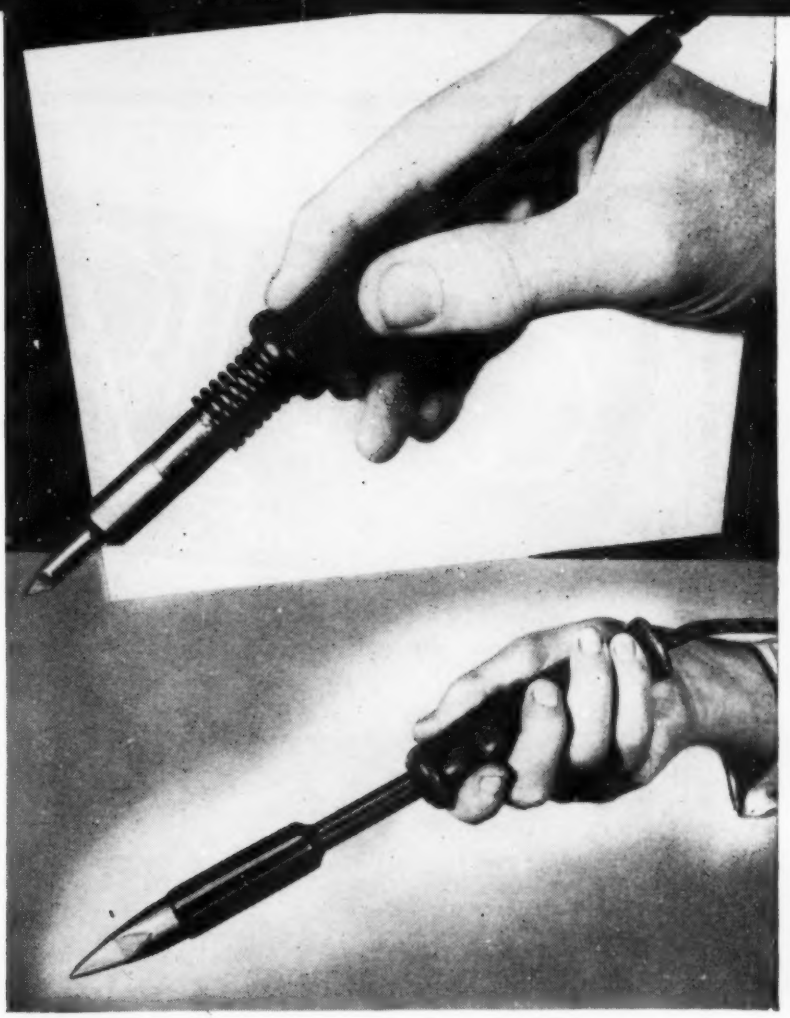
Factory and General Offices: 6650 SOUTH CICERO AVENUE, CHICAGO 38, ILL.
Branch Offices: KANSAS CITY • SAN FRANCISCO • ST. PAUL • LOS ANGELES

ALL OF THE ABOVE ITEMS MAY BE QUICKLY AND CONVENIENTLY ORDERED FR E KE

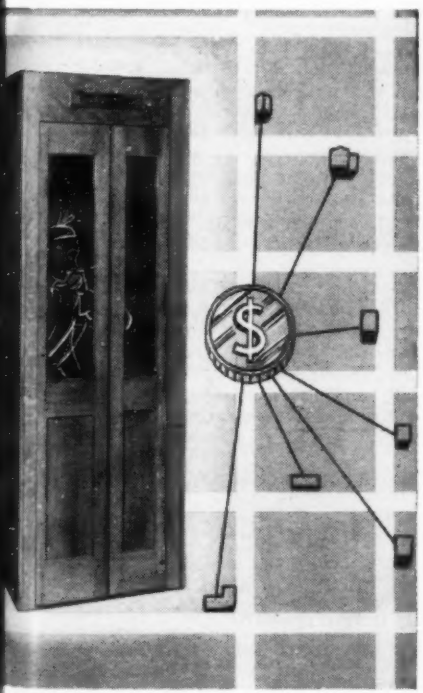
Long Life Expectancy is built into pressure treated Southern Pine Poles and Crossarms. Carefully and thoroughly treated by the AMERICAN CREOSOTE WORKS, INC., these poles have the extra durability required for dependable service under the toughest climatic conditions.



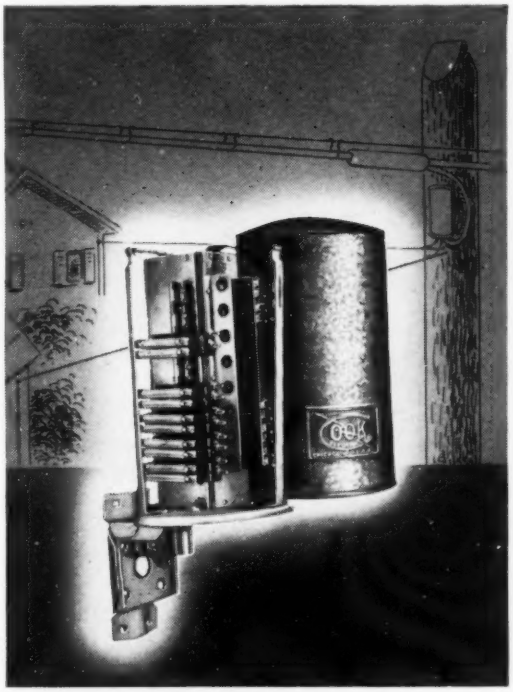
Poles Stay Put! Never-Creep Anchors are ideal for normal guying, because they pull against solid earth. Five easy steps install these A.B. CHANCE CO. Anchors: (1) Bore hole, (2) Drive Rod, (3) Hang "Never-Creep" Plate, (4) Tighten Guy, (5) Fill in hole—and the job is done!



Neat, Precision Soldering is easy when you use a Vulcan Electric Soldering Iron. The high-powered heating element assures a long life of unimpaired heat production. These VULCAN ELECTRIC CO. irons come in 15 sizes of screw and plug-tip types—including the "Pygmy" tool, shown at top, for delicate soldering in cramped spaces. Copper tips are easily replaceable.



ake Every Pay Station a Paying Location! hurchill booths attract extra patronage everyhere. That's because they give the public the ivacy, roominess and comfort it wants. Above the CHURCHILL CABINET CO.'s No. 100 ooth, with automatic light switch and ventilator.

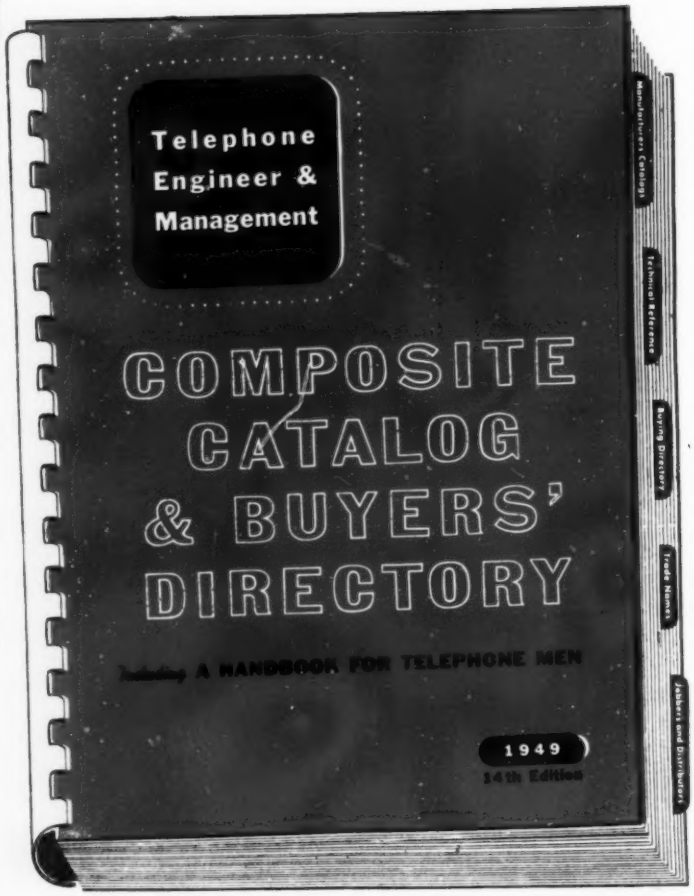


Convenient and Economical! Drop connections, fuses and lightning discharges are easily reached at the front in the S-20 Pole Cable Terminal, made by COOK ELECTRIC CO. Guide holds hood in raised position for work ing ease; self-soldering nozzle lies close to pole.

Solves Battery Problems! Gould Plante and Flote Batteries have features that cut maintenance and charging costs and lengthen life. These famous batteries, made by GOULD STORAGE BATTERY CORP., are designed to meet the specific needs of telephone men.

QUESTIONS and Answers

"Questions and Answers" is one of the most popular editorial features of FORTNIGHTLY TELEPHONE ENGINEER. *(See Pages 31-32)*



Operating Telephone Men Ask for this FEATURE . . .

. . to appear in 1949 TELEPHONE BUYER'S DIRECTORY & COMPOSITE CATALOG

In response to our query in a letter enclosed with each 1948 Telephone Buyers' Directory & Composite Catalog for ideas as to how the 1949 Directory-Catalog could be made still more valuable to telephone men many of the responses suggested a Question and Answer section similar to a column under this name appearing regularly in TELEPHONE ENGINEER publications.

Our staff has prepared such a section for the coming 1949 Telephone Buyers' Directory & Composite Catalog. Scores of questions sent in by our readers and answered by our staff, carefully illustrated in many instances, will make this year's volume a valuable addition to your reference library.

The Only Composite Catalog Published for the Telephone Industry

The Composite Catalog Section of this big Buyer's Directory pictures and gives detailed information on almost every type and make of telephones and switchboards on the market today. Protective equipment, Spinning equipment, Mobile Radios, Recording Instruments, Insulators, Wire, Hoists, Poles and many other items used by telephone companies are pictured and described in this section. *Before buying consult your Telephone Buyers' Directory & Composite Catalog.*

NEWSLETTER
TELEPHONE ENGINEER

Fortnightly TELEPHONE ENGINEER ★ TELEPHONE ENGINEER AND *Management*

ON THE 1st OF EACH MONTH ON THE 15th OF EACH MONTH

NEWSLETTERS ***on Alternate Weeks***

February 15, 1949

Dear Sir:

Developed on basis of extensive studies in cooperation with staff of Michigan Public Service Commission & representatives of Michigan Bell Tel. Co., FCC announced Jan. 27 that it has prescribed depreciation rates, effective Jan. 1, 1949, for Michigan Bell which are expected to produce depreciation expense for 1949 of approximately $11 million; reduction of about $750,000 when compared with the depreciation rates originally proposed by the company.

This is first instance in which FCC has formally prescribed depreciation accrual rates for a telephone company. Similar studies have been in progress with respect to several other Bell System telephone companies, the FCC stated, adding that proper control of depreciation rates is highly important in all considerations directed to the determination of reasonable telephone service rates.

Depreciation expense claimed by the Bell System, the FCC stated, amounts to approximately $275 million annually or about 13% of the System's total current operating expenses of about $2 billion. The depreciation reserves of the Bell System companies total approximately $2½ billion or about 31% of the Bell System's plant investment of more than $8 billion. The FCC pointed out that the depreciation reserve is deducted from plant investment to determine the "net investment" on the basis of which a "fair return" is sought from telephone users.

* * *

Independent companies are due to be affected by present number of industries seeking "safe" havens in smaller cities. National Security Resources Board is pushing industrial dispersion program to get new plants located away from big cities. Towns smaller than 50,000 it thinks, are relatively safe from atom bombs or guided missiles "in the foreseeable future." Idea is taking hold. Officials say only 1/3 of new factories currently built or bought are in cities of 100,000 or over. There's 10% increase in firms seeking sites in towns of 10,000 or smaller.

* * *

Supply of lead will continue high in 1949, Robert Lineley Ziegfeld, sec. of Lead Industries Assn. recently told Colorado Mining Assn. in Denver. Mr. Ziegfeld forecast increased mine production for 1949. Large supply of lead scrap, he asserted, indicates heavy secondary production, although not equaling last two years. In 1948, tonnage of lead available to U. S. consumers totaled 1,155,000 tons, or slightly less than 1,200,000 tons consumed in 1947. On demand side, Mr. Ziegfeld said storage batteries, cable, construction, petroleum, paint and government are major factors. He said, "demand of the cable makers does not seem to have been satisfied. Some substitutes for lead cable sheathing are being used, but largely to piece out cable makers' lead supplies." Cable making industry apparently has not yet caught up on power & telephone system extensions, he asserted.

General Tel. System, reports its companies added record number of telephones in 1948. Harold V. Bozell pres. said system gained 112,794 telephones, bringing total to 1,073,152 at year end. Unfilled applications for service at close of year totaled 123,000, Mr. Bozell stated. He added that this was about same number as close of 1947, & consists in large part of applications filed recently.

Other highlights of Mr. Bozell's letter to stockholders outlining "matters of current interest" include: (1) Record plant construction during year cost over $40 million, compared with about $28,500,000 in 1947; (2) Mobile radio telephone service is beginning to provide new source of revenue; General system has commercial installations in four cities; more under construction; (3) During 1948 some $19 million of new money was obtained by corporation & its subsidiaries from sale of securities; (4) Rate increases authorized to system companies since January 1, 1947, total $3,894,200 per year. Applications are pending for another $1,421,000.

* * *

The Montgomery County Circuit Court has rejected the Commission's disallowances of Southern Bell's actual operating expenses in every particular, and held that finding of rate of return of less than 6-2/3% for the company in the state is "arbitrary, capricious and void." The court, in opinion by Circuit Judge Walt B. Jones, ruled that bonds filed by company would be dissolved if no appeal was filed within 30 days, and that in either event Southern Bell should go on charging rates put into effect under supersedeas bond.

The court order, in reversing disallowances of expenses & payments for license contract with A. T. & T., rearrangements and changes, traffic, accounting and commercial expenses, lunchroom expenses, and pension costs, and subtraction of construction work in progress from company's rate base, thus continued a rate schedule which is estimated to produce additional $2,530,000 a year, instead of $360,000 granted by commission in its order.

* * *

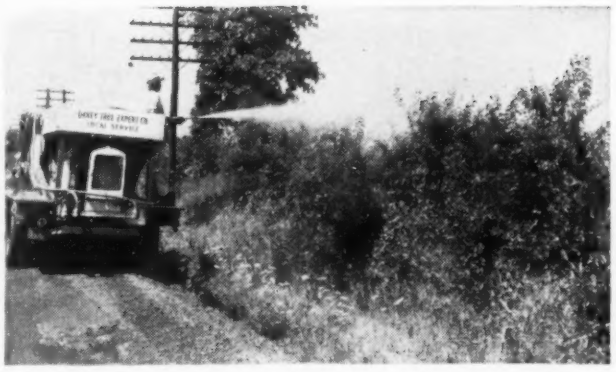
Highlights: Central Tel. Co. completed cutover of Porter, Minn., exchange to automatic operation....Marlin Field elected pres. of Independent Tel. Co., Joice, Iowa....Nebraska Continental Tel. Co. to erect building at Neligh, Neb....Hamilton County Farmers Tel. Co., Aurora, Neb., announced need for new capital to finance $75,000 improvement program....Lancaster (Tex.) Tel. Co. converting to automatic operation.... J. H. Moody purchased Bald Knob (Ark.) Tel. Co. from M. Burton....North Plains Tel. Co., Dumas, Tex., granted charter; $58,500 capital; incorporators, Maude April Spencer, Lucian W. Spencer & Wm. Lee Spencer.

G. W. Townsend sold Townsend Rural Tel. Co. to Harmon Tel. Co., Cresbard, S. D....S. B. Green, pres., Ellijoy (S. C.) Tel. Co., resigned duties with Knight Bros., Inc., Sumter, S. C.; will devote his entire time to interests of Ellijoy company & be available as management consultant for other telephone companies....F. M. Sparling, Frederick, Okla., division manager, Southwestern States Tel. Co., resigned effective Jan. 20; was succeeded by M. E. Barnes, who has been division maintenance superintendent for past six years....Milroy (Minn.) Tel. Co. completed switchboard modernization program.

Ray W. Smith, Editor

Kills 75% of all roots *permanently...*

AS PROVED IN COMMERCIAL OPERATIONS



BEFORE: A Davey crew at work spraying on an osage orange hedge.

AFTER: One year later—the results speak for themselves.

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The expense of the initial application compares favorably with hand cutting. A large percentage of saving in maintenance can be realized the following years.

Davey Chemicals must be applied after the leaves are well developed and before fall coloring begins. Because of this limited season, may we suggest that you write your Davey representative, or direct to Kent for information regarding their spraying time schedule in your area. Scarcity of chemicals, manpower and equipment also make careful, advanced planning of work a necessity.

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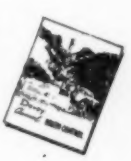
FREE! Send me your free illustrated booklet giving the complete story of the Davey Chemical Brush Control Service.



I am interested in seeing any right of way located near me that has been sprayed by Davey. Send me its location and history.

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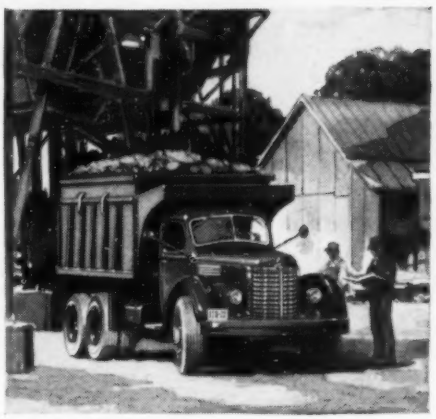
What it takes to stay heavyweight champ 17 years

1. Real heavy-duty truck reputation!

To haul lots of oil, you pick a he-man truck that's made for the job. You pick a truck with a record of performance that shouts "TOUGH!" You pick an International Truck.

Registration figures show that for 17 straight years Internationals have led the heavy-duty truck field.



2. Real heavy-duty power!

On construction jobs you need a truck that can take a pounding . . . a truck with a powerful engine, a rugged frame, sturdy strength through and through.

You find trucks like that at International Harvester . . . a builder of truck power for 42 years, a manufacturer who knows what tough trucks need.

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On big logging jobs you need size, brute strength and power . . . *specialized* by people who know your job in terms of trucks.

International heavy-duty trucks are big, tough, powerful—and *specialized* to handle the toughest hauling jobs. That's our engineering tradition.

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For 17 straight years, International heavy-duty trucks have been America's first choice for heavy-duty work. Registration figures prove it. In trucks having gross weight ratings over 16,000 pounds, Internationals are so far ahead of the field that the heavyweight crown carries a Triple Diamond emblem.

Right now, International Dealers and Branches can give you quick delivery on International heavy-duty trucks . . . specialized trucks, engineered and powered for your job.

Your nearest International Truck Dealer or Branch will be glad to send a qualified transportation engineer to analyze your hauling problem, to give you facts and figures on equipment to meet your specific needs, to answer any questions you may have. Call him soon.

4. Real heavy-duty truck stamina!

Housing is a big job where you measure truck toughness by years of getting the work out and keeping the costs down on all hauling operations.

You can count on years of service from International heavy-duty trucks. The nation's largest exclusive truck service organization is set up to keep Internationals operating at peak efficiency, over the long haul.

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1947 WISCONSIN TELEPHONE PLIGHT:—"The Wisconsin Public Service Commission, Rates and Research Department, recently issued Bulletin No. 8 entitled "Statistics of Wisconsin Public Utilities —1945, 1946, 1947". Pages number 50 to 56 deal with the Telephone Industry in Wisconsin and the statistics include telephone companies with annual revenues of more than $3,000 or approximately 98.2% of the entire Wisconsin Telephone Industry.

"The ten-year trend of net operating revenues is compared in the following summary:

Percentage of Net Operating Revenues to Operating Revenues

Year	Percentage	Year	Percentage
1938	14.44	1943	11.40
1939	16.93	1944	11.04
1940	17.02	1945	9.12
1941	14.40	1946	6.99
1942	12.10	1947	(.72)*

* () denote a red figure

Year	Average Per Station Operating Revenues	Total Deductions	Operating Income
1938	$41.15	$35.21	$5.94
1939	41.63	34.58	7.05
1940	42.21	35.02	7.18
1941	43.25	37.02	6.23
1942	44.30	38.94	5.36
1943	46.42	41.13	5.29
1944	48.19	43.02	5.17
1945	49.90	45.35	4.55
1946	50.42	46.89	3.53
1947	49.35	49.70	(.35)*

*() Denote a red figure

"Operating revenues per station consistently gained each year from $41.15 in 1938 to $50.42 in 1946 and followed with a drop to $49.35 in 1947. Total deductions reached its peak during the 10-year period of $49.70 per station in 1947 and was lowest at $34.58 in 1939. The $5.94 net operating revenue per station ratio in 1938 increased to $7.18 during the following two years, but commencing in 1941, it consistently declined to a negative figure ($.35 in 1947).

"The above statistics include those of the Wisconsin Telephone Company which notwithstanding an income tax credit of $1,544,870 was the only Class A or B Company in the State to report a net operating loss in 1947. Although the net loss ($899,429) of the Wisconsin Telephone Company was responsible for the net operating loss of $282,872 shown for the State as a whole, the Public Service Commission's Report discloses the fact that the Independent telephone companies in the State, despite an addition of 17,963 Independent revenue-producing stations in 1947, experienced a DECREASE in net operating income of $250,149 as compared with 1946. Further in 1944 the Wisconsin Independent companies served 186,668 telephones and earned a total net income of $780,067. In 1947 they served 229,400 independent telephones and earned a total net income of $616,557. In other words, it required 42,732 MORE independent telephone in 1947 to earn $163,510 LESS net income than was earned in 1944."—**Newsletter of the Wisconsin State Telephone Association.**

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Releases wires carrying charging current for revenue-producing service.

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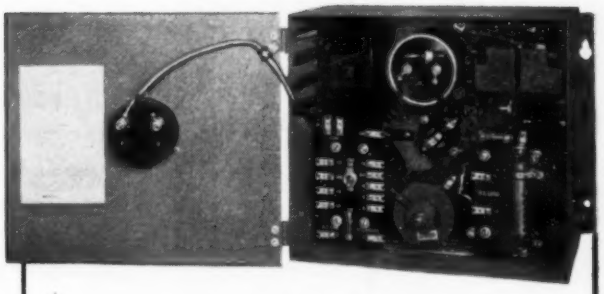

RECTIFILTER with door open to show the compact arrangement of the dry disc rectifying unit and other long-life components. No moving parts.

*Reg. U. S. Patent Office

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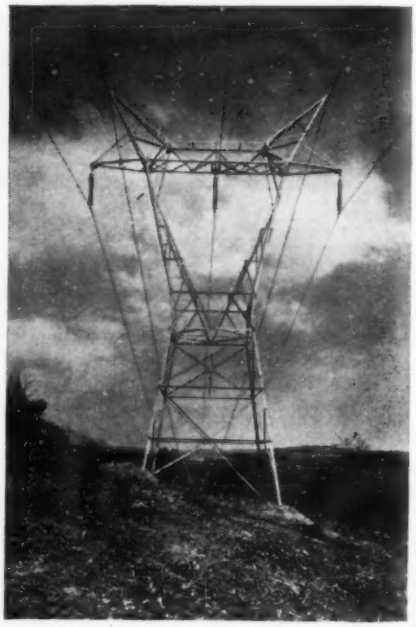
That situation was largely changed with the advent of bethanized strand. For bethanized coatings (developed and applied exclusively by Bethlehem) are available in three different weights—the equivalent of three widely-different life-spans. Weight A is equal to extra-galvanized; weight B is twice the thickness of A; weight C, three times the thickness of A.

Experience has shown that the life of a zinc coating in atmospheric exposure is proportionate to its weight. Hence, with three bethanized coatings to choose from, you can select the one whose life expectancy is approximately that of the individual line.

Bethanized coating is a guardian armor of highly-pure zinc, applied electrolytically by a patented process. It forms a tight, even jacket—no thin spots here, thick spots there; no valleys or "ripples." Every inch of every wire is protected *uniformly* against corrosion. Moreover, the coating is so ductile that it will not check or peel when the strand is handled or fastened.



Bethanized strand is available in all strengths — common, siemens-martin, high strength, extra-high strength, and utilities grade (specification). We'd like to give you the full story — including suggestions on matching strand life to line life. Why not ask our representative to spend a little time with you?

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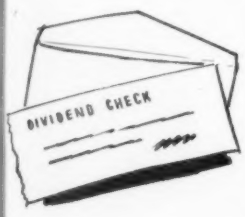
EDITORIAL

The Changing Character of Telephone Revenues

SINCE PEARL HARBOR an important change has been taking place in the character of the operating revenues of Independent telephone companies. The principal effect of this change is the increasing dependence of these companies on toll revenues.

What has happened and is happening is best illustrated by the combined records of the Class A and Class B Independent telephone companies —that is, Independent companies with more than $50,000 of annual gross operating revenue. There were 281 such companies in 1947.

Until the year 1941 the gross operating revenues of these companies ran, year after year, at the rate of about 75% exchange (rental) revenue, 23% toll revenue and 2% miscellaneous. Away back in 1930, for instance, these gross revenues were 75.2% exchange, 22.8% toll and 2% miscellaneous. For 1940 they were practically the same.



But in 1941 toll revenues began to increase. Until that year, toll revenues of these Independent companies had averaged between $8 and $9 per company-owned station a year. In 1941, for the first time, toll revenues of these companies exceeded $9 per station for the year. The average, that year, was $9.65.

Since 1941 there has been an increase, every year, of average toll revenue per company-owned station of these Class A and B Independent companies. For 1947, average tolls per station were $17.65.

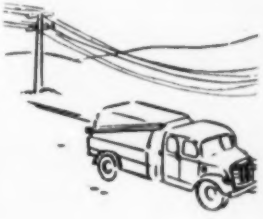
The result of this yearly increase in the average per station toll revenue was that, in 1947, exchange revenues represented only about 61% of total operating revenue, as compared with 75% before 1941. Toll revenue, in 1947, was 36% of total operating revenue, as compared with the pre-1941 23%. And indications are that the per station toll revenue for 1948 will be higher still.

One result of this situation has been to hold down exchange rates, by making unnecessary many increases of exchange rates that would otherwise have had to be made. To the end of 1947, in fact, exchange rates of all these Class A and B Independent companies combined had shown remarkably little increase. Average annual rental per company-owned station in 1941 of these companies was $28.36. For 1947 the comparable figure was $29.65. Total increase of exchange rates has therefore been about 4.5% during this period, while per-station toll revenues increased an average of 84%.

From all this one could easily jump to the conclusion that this large increase in toll revenues has taken up the slack of increased operating expenses of telephone companies. Analysis shows, however, that this is not the fact. The amount left over for fixed charges, dividends and surplus of these Class A and B Independent companies, for 1941, was an average of $8.83 per station. For 1947 it was only $6.85.

It seems clear that, although toll revenues have increased greatly, exchange rates have not increased enough.

The danger to telephone companies in this situation is apparent. The process of increasing exchange rates is, under our regulatory system, ordinarily a long drawn out affair. On the other hand, toll revenues can slump quickly—and would no doubt do so if there should be a recession, which could come about quickly if the present high level of employment in this country should begin to decrease.



No one, of course, expects toll revenues to vanish; probably no one expects them to drop back to the pre-1941 level. The rapidly growing habit of the American public of using "long distance" much more than in years past, is not going to disappear. Toll revenues will no doubt continue to play a more important part in telephone company revenues than they did in prewar years. But toll revenues are so important to many telephone companies now—because their toll revenue is high and their exchange rates are low—that a slump of 20% or even 10% in toll revenues could cause them trouble.

An old saying seems fitting here—"Whatever goes up comes down."

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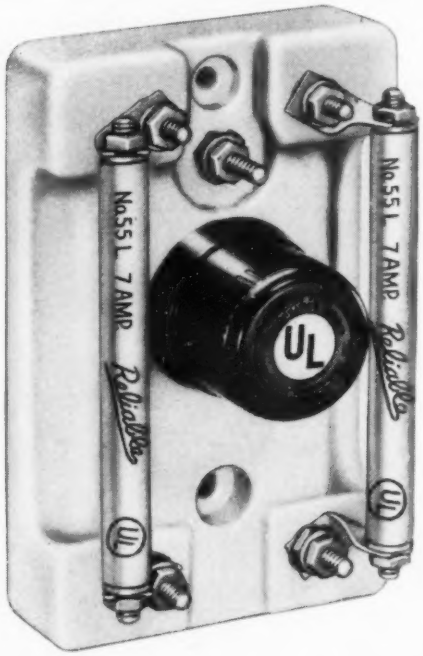

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NEWS BRIEFS

Blue River, Wis., Companies Merge Into New Unit

The newly formed Blue River Co-operative Telephone Co., has received permission from the Wisconsin Public Service Commission to purchase the assets of eight small telephone companies in the Blue River, Wis., vicinity.

The Commission authorized the company to issue 400 shares of common stock at $25 a share to finance the purchases. About $7,000 will be spent on the purchases. The remainder will be used for technical improvements.

After acquisition of the eight companies, officers of the group plan to incorporate the cooperative.

$137,000 Expansion Program For Redlands, Calif.

A $137,000 expansion program for the California Water & Telephone Co., in Redlands, Calif., was recently announced by Edgar R. Fisher, manager.

One of the improvements planned is direct service between Redlands and San Bernardino. The expansion also will result in the installation of 1400 telephones for a net gain of 875, and provide telephones for almost all of the 1016 persons who now have orders standing with the company.

Jack Walton Honored By Oklahoma Telephone Ass'n.

J. W. (Jack) Walton, president of the Oklahoma Telephone Co., Broken Arrow, Okla., prominent civic leader and four-time president of the Chamber of Commerce, was recently honored, at a meeting of the Oklahoma Telephone Association in Oklahoma City.

Following the meeting Mr. Walton received a gold plaque from the association and a copy of a resolution adopted by the Board of Directors of the Oklahoma association.

The resolution praised the accomplishments of Mr. Walton, stating that he had accomplished many things for the industry in Oklahoma and the United States by his "untiring efforts and devotion to duty and by giving of his time and assistance to the betterment of the pioneer industry of the telephone industry in Oklahoma and the United States."

Commenting that the people of the state of Oklahoma, the telephone Industry of Oklahoma and the United States owe to the Honorable J. W. (Jack) Walton, an "everlasting debt of gratitude and appreciation for the many things he has done for the subscribers and the association, the resolution stated that Mr. Walton was the first telephone man to serve as President of the Oklahoma Utilities Association and, the first telephone man to serve as a director on the board of directors of the United States Independent Telephone Association, and the first Independent telephone man to install automatic telephone equipment in Oklahoma.

Rate Adjustment Approved For Johnson Creek, Wis.

The Rock River Telephone Co., Johnson Creek, Wis., has received authority from the Wisconsin Public Service Commission to put into effect new rates which will give the company $5,768 more in annual revenue. The commission granted the company the right to make the following increases: Single-party, business, $1.50 to $3.50; single-party residence, $1.25 to $2.50; and rural $1.25 to $2.20.

John O'Day Retires From Wisconsin Bell

John O'Day, vice president of the Wisconsin Telephone Co. since 1922, retired January 31, it was announced recently following a meeting of the board of directors. Mr. O'Day, in charge of personnel and public relations activities since 1927, has seen the Wisconsin company grow from 27,000 stations when he started with it 46 years ago to 647,000 telephones at the present time.

The retiring Wisconsin company vice president began his career in the telephone business and Bell System in 1902 as a stenographer. During his long career, he held various executive positions, including that of secretary, in addition to his long service as vice president. He has been a member of the board of directors since 1924, and is retiring from that post as well as his assignment as vice president.

North Dakota Company Repeats "Top" Expansion Year

New work and repairs in the amount of $14,000 spell the biggest year in the history of the Shepard Telephone Company, Broadview, N. D., it was revealed to stockholders at the organization's recent annual meeting.

Stockholders were each assessed $188.35 to cover the $14,000 expenditure, an amount which has been spent in building new telephone lines and in repairing old ones. New poles, new wire and the cost of metallicizing lines account for the major percentage of the funds used.

The Shepard company serves Bald Hill, Sverdrup and Broadview, as well as a small area of Washburn Township, N. D.

Clifford Appointed Director Of Washington Commission

Raymond W. Clifford, a well-known Washington state attorney, was recently appointed as the Director of the Washington State Department of Public Utilities. He replaces Andrew J. Zimmerman, who had held the post under former Governor Wallgren.

Press reports state that Washington's Governor Langlie is sponsoring legislation at the current session of

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Amertel "85", with its greater tensile strength, means longer spans and a consequent savings in poles, crossarms and hardware.

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the Washington State Legislature which would abolish the two regulatory transportation and public utilities department and would establish a Public Service Commission, comprised of three commissioners with six year overlapping terms. If such legislation is enacted, it is understood that Governor Langlie's plan is to appoint Mr. Clifford and Owen Clark, the new Transportation Department Director, as members of the new commission.

Hulls and Potter Renamed To California Commission

Commissioners Harold P. Huls and Kenneth Potter have been reappointed for six-year terms as members of the California Public Utilities Commission. Commissioner Huls had been originally appointed a member of the California commission on November 9, 1945, to fill an unexpired term. Commissioner Potter was named on Feb. 5, 1947, to fill an unexpired term.

Automatic Systems Planned For Three Texas Towns

Southwestern Associated Telephone Co. has announced plans to install automatic telephone service in Baytown Crosby and Mont Belvieu, Texas, this year.

According to W. W. Hunt, district manager, the automatic system at Crosby and Mont Belvieu will be completed by the middle of the year.

Equipment for Baytown's service will arrive about July, and installation is expected to be finished in December.

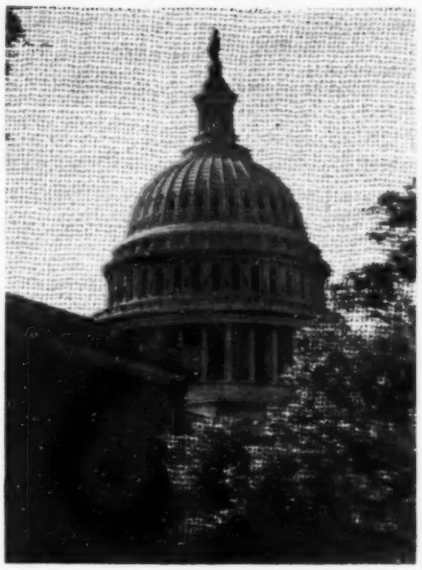
South Dakota Exchange To Be Discontinued

The South Dakota Public Utilities Commission has authorized discontinuance of the Wasta, S. D., telephone exchange. The commission said the owner and operator, Mrs. Roy Gravatt, is "physically and financially" unable to continue operation of the exchange which serves 20 subscribers.

Arena Telephone Firm Given Rate Increase

The Arena & Ridgeway Telephone Co., Barneveld, Wis., was given rate increases in an order issued by the Wisconsin Public Service Commission.

The company, which has about 430 telephones in use, reported that its profit for 1948 would be about $13. Approved rates will bring in about $5,700 a year in added revenue.



Washington Bureau REPORTS

BY ROLAND DAVIES and FRED HENCK

Wage-Hour

SUBSTANTIAL hope that the existing exemption under the Fair Labor Standards Act of telephone exchanges with less than 500 stations was seen in the capital early this month as the result of the reaction of the House Education and Labor Committee to the hard-hitting presentation of a spokesman for the Independent telephone industry.

Committee members, both on the Republican side and among the Democrats (many of the latter newly-elected Representatives militantly in favor of such Administration proposals as an increased minimum wage) appeared to have "had their eyes opened" by the statement of Clyde McFarlin, President of the Iowa Independent Telephone Association and the Montezuma Mutual Telephone Co., on behalf of the U.S. Independent Telephone Association.

Mr. McFarlin was one of the relatively few spokesmen selected by the Committee to make oral presentations of their positions before the House group. A large number of persons submitted written statements, but the Committee, because of previous extensive hearings on the subject, picked for the oral appearances only those who, on the basis of the written statements, appeared to have something new or particularly pertinent to say.

Mr. McFarlin's gloomy picture of the financial plight small Independent exchanges would find themselves in if the exemption is repealed and the minimum raised to a possible 75 cents an hour was especially buttressed by the concern expressed by midwestern Congressmen concerning the ability of Independents struck by the disastrous ice and snow storms of January to rebuild their plants.

The Iowa Association chieftain keynoted that repeal of the 500-station exemption "would destroy most of the small exchanges operating under 500-stations." He added, "It is easy to see that the net result of the repeal of the 500-station exemption would be to deprive hundreds of small towns of telephone service."

In addition, Mr. McFarlin urged the increase of the exemption to exchanges serving less than 1000 stations, explaining that this is particularly necessary if the statutory wage floor is boosted to 75 cents an hour. Recalling that before the exemption was enacted in 1939, 22 of the 30 state commissions reported themselves in favor of the plan urged a 1000-station exemption, Mr. McFarlin declared that if the "minimum wage is raised to 75 cents an hour and no exemption is granted to exchanges between 500 and 1000 stations, the result will be very large increases in telephone rates to subscribers in small towns and rural areas, curtailment of service in many instances, loss of marginal subscribers, and a consequent lowering of the value of telephone service to the remaining subscribers who may be able to retain their phones."

Pointing out that small Independent telephone companies "are paying as high or higher wages to their operators as other girls and women of comparable skills are receiving in the same communities," Mr. McFarlin noted that "there are no seasonal layoffs or layoffs from other causes in the telephone industry. Employment is constant so that employees of telephone companies might fairly be said to have reached the goal of a guaranteed annual wage even though their hourly rate may be in some cases below that paid in manufacturing industries using women, yet because of the steady employment of the telephone operator and the sometimes too frequent layoffs in industry, at the end of the year the telephone operator will have received the larger annual wage."

The Montezuma company President added that "The most persuasive fact that our industry is paying comparable wages for comparable skill in the communities in which they operate is the fact that almost all of these small exchanges have a waiting list of applicants for operators."

His company, Mr. McFarlin said, earned only 1½% on invested capital last year, a return which he noted in a timely sidelight was especially inadequate because of the telephone companies' vulnerability in natural disasters. The Montezuma company would have to charge subscribers $9 a year more, and other companies between 500 and 1000 stations would have to have average increases of $10 a year more, should the minimum be fixed at 75 cents an hour, with appropriate differentials for skill and seniority, Mr. McFarlin brought out.

He recalled that operators of small exchanges, when asked what would happen if they obtained a rate increase sufficient to pay wages resulting from a 75-cent minimum, responded with such comments as "we would lose one-third of our phones" or "I am sure our present rates are all the traffic will bear" or "a rate increase to cover the added expense would put us out of business."

The Iowa telephone official stated that "it is a matter of common knowledge that costs of living are much lower in the small communities than in the large cities," going on to point out that a wage increase hits a telephone company three times a day, because of the round-the-clock operation.

He brought out that in many small communities the telephone company would be the only enterprise affected by the minimum wage law, and that "a 75-cent hourly minimum wage would establish a higher rate by the telephone company than ordinarily paid for help in that community, and aside from the economic effect upon the telephone company it would tend to create bad feeling and ill will in the community."

Mr. McFarlin explained that dial conversion is not the answer, because of the resultant depriving of the operators of employment, and the fact that dial conversion in many cases would not be economically

feasible. He went on to criticise the proposal in one bill which would limit the exemption to exchanges with one operator on duty, pointing out that this would be "susceptible to varying meanings and its operation would be most difficult . . . An exchange might be subject to the exemption one week and out the next week, thus making it very difficult for the exemption to be administered."

Bell Financing

THE RECENT direction of the financial winds for the largest telephone system in the world—the Bell System—was graphically depicted in the report to the stockholders for the last quarter of 1948, recently distributed to the stockholders.

Although the item which received the most press coverage was the fact that A. T. & T. was able to earn the $9 dividend rate during 1948, perhaps the most significant point was President Leroy A. Wilson's statement that virtually all of the new capital raised by the Bell System during the year—more than $1 billion—was in the form of long-term debt, raising the proportion of debt capital in the System to about 52%.

Mr. Wilson, discussing the debt-equity capital ratio, said "The heavy construction program will continue to require large amounts of new capital. Sound financing for the long run requires that the greater part of this come from the issue of stock through bond conversions or otherwise.

"These facts emphasize the need for earnings sufficient to attract equity capital. Of the company's $357,532,600 2¾% convertible debentures of 1957, $172 million have been converted into stock of the company since March 1, 1948 . . . Including the ¾% convertible debentures of 1961, there are nearly two-thirds of this company's convertible debentures still out, and most of these would be converted into stock with telephone rates adequate to produce the necessary earnings."

Federal Communications Commission

THE TENTATIVELY-approved divisional or panel system of operation for the Federal Communications Commission was at least delayed and may have been halted completely by an interim report of a Senate Interstate and Foreign Commerce subcommittee appointed last summer to study the communications situation.

The divisional plan, first reported in TELECOMMUNICATIONS REPORTS, called for semi-autonomous three-member panels of the FCC, one each for common carrier, broadcasting, and safety and special services matters. Commissioner Paul A. Walker, charter (since 1934) FCC member and before that an Oklahoma Corporation Commissioner, was slated to be Chairman of the common carrier division. Appeals to panel decisions would have gone to the full FCC for decision.

In its report, the subcommittee said that some reorganization is necessary to speed the agency's handling of its case workload and to avert the repeated criticism of the Commission by Congressional and other sources. But the Senators proposed instead extension of the procedure of trial examiners' conducting hearings and a plan whereby single Commissioners or specially-constituted subcommittees would write final decisions for Commission approval. The subcommittee also recommended elimination of one of the most frequent charges against the FCC—that lawyers who participate in hearings are inclined to carry their judgment as "prosecutors" into the work of drafting final reports—by a legal review board completely divorced from the FCC Law Bureau which would have as its sole duty the legal review of proceedings and the drafting of final decisions. The Senators (the report was signed by Senators Charles W. Tobey of New Hampshire and Ernest W. McFarland of Arizona, as the third member, Senator Albert W. Hawkes of New Jersey, did not run for reelection and did not take an active part in the subcommittee work) also urged continuation of the communications study. Most of the non-broadcasting references, however, were to the international telegraph situation and the need for consolidation in that field.

AFCA Convention

IN KEEPING with the status of the Navy as the host organization for this year's annual convention of the Armed Forces Communications Association, Admiral Louis Denfeld, Chief of Naval Operations, is slated to deliver a feature address at the annual AFCA banquet Monday, March 28, at the Shoreham Hotel in Washington, D. C.

The AFCA is composed of present and former communications personnel in the armed services and civilians associated with the communications industry. A substantial number of Independent telephone people are members.

This year's convention is slated for two days, March 28-29, and will include exhibits and demonstrations planned and directed by the Navy at its stations and aboard ships in the Washington area.

Coming Conventions

Kentucky Independent Telephone Association, Phoenix Hotel, Lexington, March 15.

Texas Telephone Association, Baker Hotel, Dallas, March 21-23.

Ohio Independent Telephone Association, Neil House, Columbus, March 28-30.

Iowa Independent Telephone Association, Fort Des Moines Hotel, Des Moines, April 5-6.

Executives Conference, United States Independent Telephone Association, Edgewater Beach Hotel, Chicago, April 11-12.

Nebraska Telephone Association, Lincoln Hotel, Lincoln, April 19-20.

Illinois Telephone Association, Hotel Pere Marquette, Peoria, April 27-28.

Indiana Telephone Association, Claypool Hotel, Indianapolis, May 4-5.

Pennsylvania Independent Telephone Association, Abraham Lincoln Hotel, Reading, May 9-10.

Kansas Telephone Association, Jayhawk Hotel, Topeka, May 17-18.

New York State Telephone Association, Jamestown Hotel, Jamestown, May 25-26.

California Independent Telephone Association, Biltmore Hotel, Los Angeles, June 23-24.

Fig. 1—Note electric poles on either side of alley with pole in foreground out of line and others not in good alignment.

The "Mule and Dog" Joint Use Team

By Verne B. Clark

District Manager,
Middle States Tel. Co. of Illinois,
Pekin, Ill.

THERE IS A growing school of thought among Independent telephone operating men today which looks at the old idea of a 50-50 *division* of the cost of jointly used electric poles with a "fishy eye", and considers that the comparative natural pole height requirements, capital savings, operating savings and other features of joint pole use are so largely one-sided, that the telephone utility's more or less standard 50% burden of cost in the joint-use team borders upon the ridiculous. As a matter of fact, in this connection one owner of a struggling Independent telephone exchange recalled the old story about certain hill country fields being so steep that the natives used a dog on the uphill side in a mule and dog team. "*Joining up with the electric company and paying half of the cost of a 35' electric pole,*" *he continued, "is like working a dog on the DOWNHILL side in a hill country plow team".*

Quite aside from the fact that the stature of the telephone industry's earnings has been reduced to the "dog level" by that industry's natural vulnerability to the law of diminishing returns and other factors peculiar to the telephone business, (note that telephone companies have had to increase rates while electric companies were able to decrease them), there seems to be considerable grounds to suggest that representatives of the two industries might well sit down together to take another look at the question of joint-use in the light of mutual and public interest in future operations. A drive through the country and many small and fair sized towns, for instance, will reveal a surprising amount of duplication of pole plant and unsightly and hazardous conflicts, which should immediately prompt the question of whether the traditional 50-50 basis is so unfair to the telephone companies that the necessary progress in correcting these conditions cannot be made until the two industries agree on a more logical formula of sharing the cost of joint plant—in other words, place the "mule" and the "dog" in their natural positions in this joint-use "team".

Even though the electric utility industry's engineers as a group cannot be expected to immediately relish the idea of giving up any traditional "windfall" which may have come through the assumption of 50% of the capital and maintenance requirements where there are "convenience and necessity" telephone contacts on electric poles, the management of a very important segment of the electric industry which came into being after the

present joint-use formula was set up, is exhibiting a keen and active interest in making joint use agreements more attractive to telephone companies. It will be recalled that the R.E.A. policy is to allow telephone contacts at modest annual rental per pole.

"More Realistic View"

It is reported that this more realistic view of the joint use problem has also been gaining headway among top executives in the privately operated electric industry for quite some time,—and although this problem is not the major problem in either the telephone or electric industry, a highly cooperative attempt among service industries to recognize and to serve the public interest faithfully at all times, probably should be regarded always as a matter of prime importance in every day thinking.

In the first place, whether we like to talk about it or not, electric and communication poles at least do not enhance the appearance of the countryside nor of "planned communities" where low roof housing construction is employed. There is more than one instance where there has been rather vigorous insistence that very costly special arrangements be made by the utility companies to improve the appearance of distribution plant in such communities. The construction of underground distribution plants being prohibitive in cost or impossible from an engineering standpoint will therefore increase the necessity of careful engineering and close cooperation to eliminate the duplication of pole lines in the future.

If joint use of poles was desirable in the interest of economy and other items of public benefit in the days when telephone distribution plants in town and country were more largely of multiple crossarms and open wire rather than cable construction, it is certainly more desirable and more generally feasible now; and it can be generally accomplished only by government decree or by voluntary cooperation at the top management level of the two industries to work out a mutually equitable and attractive formula for division of the costs of placing and maintaining joint use poles.

Modern Aspects of Joint-Use Problems

It is generally conceded that the utility business is getting to be more and more of an "uphill" business and our Independent telephone operating friends' mule and dog team story may be after all a rather convenient and apt illustration of several modern aspects of the joint-use question. If we begin at the ground and consider the respective street, alley and highway clearance requirements and space requirements, we must conclude that a typical telephone pole is of Class 7 and 25′ in length, and that the minimum length required to insure proper separation of electric circuits above the ground clearance level reserved for telephone circuits is generally 35′.

Fig. 2—Electric companies are sometimes also in the telephone business. Note buckarm of electric company telephone circuits. A 45′ or 10′ higher pole would be required to accommodate joint users cable contracts. Transformer on next 30′ pole will barely clear a truck and wire leads from 33,000 volt line on top arm coming down through primary circuits to transformer are not attractive from safety standpoint.

Engineers in the electric industry have not always agreed that electric pole line engineering had a legal or moral obligation not to use or block the legal clearance level for telephone circuits, but now that the telephone has become more of a necessity than a luxury, there are probably not many of them who would care to face an irate applicant for telephone service in cases where a 25′ or 30′ electric pole caused undue delay or extra costs in getting a telephone installed.

Almost any Independent telephone plant man can point out one or more glaring and regrettable instances of where the placement of 30′ electric poles either originally or eventually was responsible for hazardous conditions which have persisted to this day and will persist until the substandard 30′ electric poles are replaced with poles of the height necessary to free the legal telephone clearance level.

Indeed, the writer has first-hand experience with and knowledge of two good sized electric pole plants constructed largely of 30′ poles. In one town, the electric utility either overbuilt an existing telephone plant with 30's or the telephone company underbuilt existing 30′ electric poles. The important factor is now that there are many hazardous conditions which cannot be eliminated until and unless the two utilities can find an equitable formula for absorbing the considerable plant loss, and the cost of new 35′ poles,—to say nothing of the now precious manpower, materials and capital required.

In the other 30′ electric pole town, it was necessary to rebuild immediately the entire telephone plant, much of whose original cable plant had been buried. Several conferences between representatives of the two utilities were aimed at working out a practical plan to adopt some of the very good 30′ electric pole plant to joint use and the electric utility, although having little knowledge of the details of telephone plant specifications and requirements, displayed a cooperative attitude definitely more liberal than the more or less standard formula embodied in the old time joint-use pole agreements.

Exhaustive field surveys and studies of feasibility of joint-use were made, and the probable advantages and disadvantages of joint-use during the life of the new telephone plant were weighed carefully. The conclusions after this study may be as interesting to others as it was

to the telephone company in this case, for it provided not only an up-to-the-minute demonstration of what folly it was to block the telephone circuit clearance level with 30′ poles in the first place, but it also provided a most practical demonstration of the fallacy of the old theory that the respective savings and other advantages of joint-use were about equal and that the cost should be equally divided.

It was found that the costs of replacing 30′ poles carrying transformers and other heavy or numerous fixtures would be tremendous, and that regardless of what portion of this expense and the expense of straightening and aligning leaning or ill-placed electric poles was to be borne by the telephone company, the extra time and expense involved in coordinating the engineering and plant work, and the great uncertainty as to whether adequate clearances could be obtained with the new plant were all but unsurmountable problems. This was without any consideration of some rather glaring disadvantages to be suffered in maintenance costs during the life of the plant:

(1) *Damage by workmen on the higher clearance levels.* It was recalled that in that town where many new telephone cables and drops had been placed several years ago after a cyclone had levelled much telephone and electric plant, a number of cases of damage either from gaffing of cable or abrasion or slackening of drops by pulling heavy electric wires over them had resulted. In some cases, telephone drops were sagged to a dangerous clearance level. While these cases were no more numerous than the aggregate number of cases in that town or others with a similar amount of overhead work stretched out over a long period of normal operations, these experiences did cast one vote for a separate telephone pole line where clear right-of-way was available on the other side of the alley.

(2) *Effect of heavy fixtures and drops.* If there is one thing that telephone plant men value especially highly, it is the appearance of their pole, cable and drop plant. Sole use of poles for telephone attachment offers no particular disadvantage in keeping a pole line in good looking condition. But place a transformer and a maze of heavier than No. 17 P.O.D. drops on the pole and there is little or no way of telling what the plant will look like in five or ten years, how much or which way the

(*Please turn to page 56*)

New CHANCE 8-way Expanding Anchor

Another contribution to better anchoring

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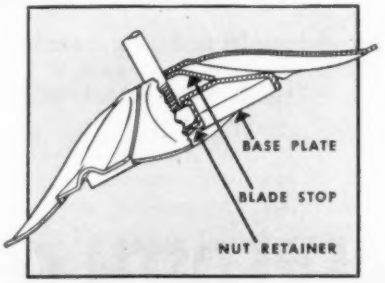
Here is one means of trimming increased line construction costs! The new Chance 8-way Expanding Anchor gives you more holding power for less money.

Better load distribution makes this new Chance Anchor stronger than other expanding anchors—and the absolute simplicity of its construction makes it the most smoothly operating expanding anchor on the market.

GREATER HOLDING AREA. Eight blades expand to form a square, with equalized load distribution all around the anchor. Each blade carries approximately one eighth of the load. There are no open areas between blades.

GREATER HOLDING POWER. The 8-way Anchor expands in the shape of a cone and holds like a wedge against undisturbed earth on all sides.

SIMPLE CONSTRUCTION. No moving parts, arms, or mechanical devices hinder the smooth operation of the 8-way anchor.



STURDILY BUILT. Each blade is formed with a reinforcing rib that prevents buckling. Hinges will not collapse under strain.

RETAINS SHAPE UNDER HEAVY LOAD. Repeated pull out tests show that the new 8-way Anchor develops more holding power under the same conditions than other expanding anchors of comparable size.

EASY, SURE EXPANSION. The pre-formed blades cut into solid earth with little disturbance and the pointed corner blades make starting easy. Linemen can tell when the anchor is fully expanded by the sound of the top plate hitting the bell-shaped blade stop.

BLADES ARE SUPPORTED BY BASE PLATE. They will not buckle down in the middle. The diagram, showing expanded position, illustrates how base plate supports blades.

NUT RETAINER, shown in diagram, makes it easy to push anchor to bottom of hole. The anchor rod and nut cannot be pulled through the base plate.

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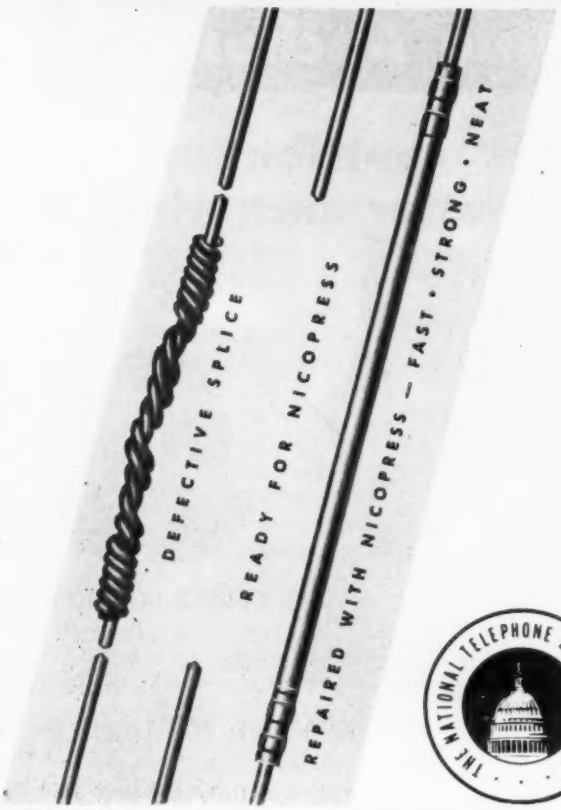
Nicopress REPAIR SLEEVES



Use Nicopress repair sleeves to eliminate high-resistance joints caused by makeshift splices. Simply cut out the defective splice, insert exposed ends into the special-length Nicopress repair sleeve and compress with Nicopress tool. **That quick,** you have a neat, dependable splice, stronger than the original wire! Ask your Automatic Electric representative about Nicopress repair sleeves as well as Nicopress sleeves for other uses.

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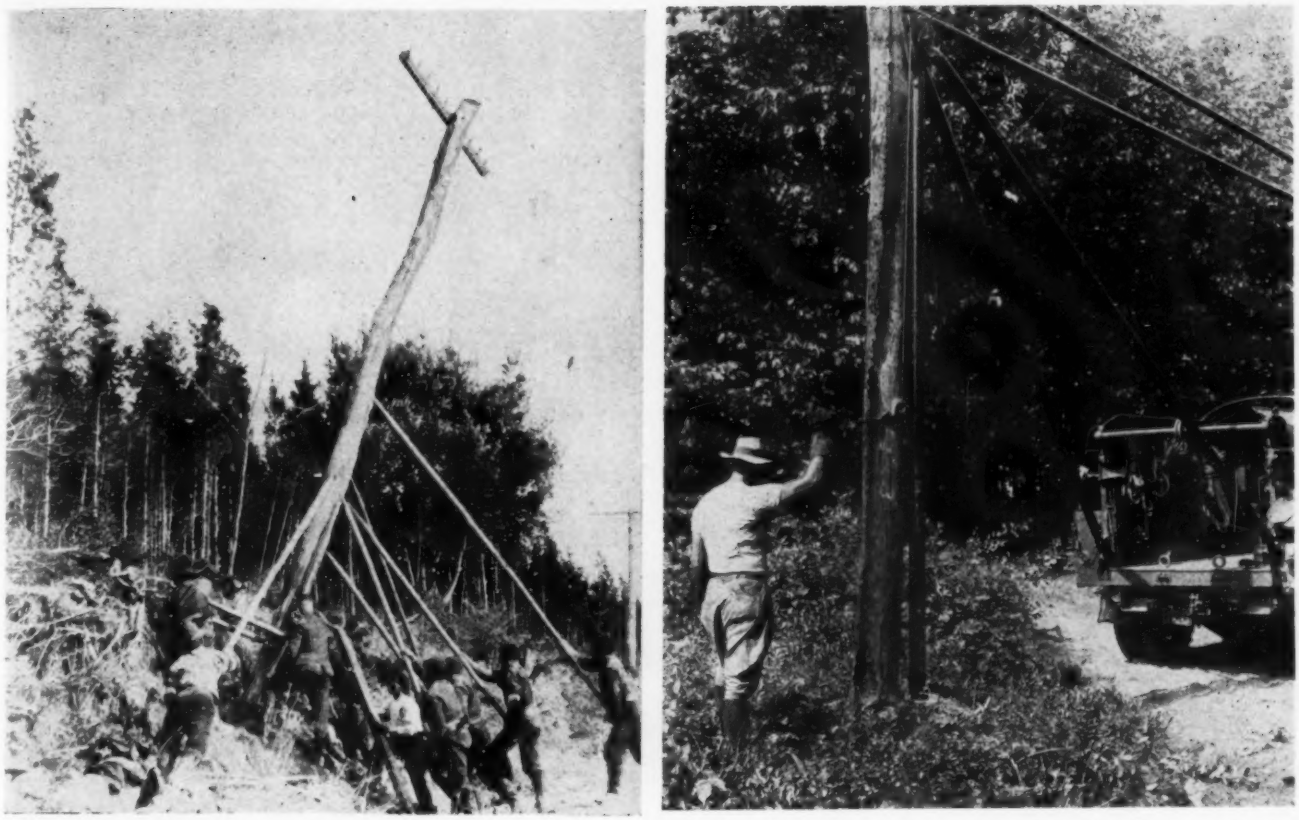


Modern power equipment used as shown at the right makes the telephone job less arduous, more efficient . . . and safer than methods shown at the left.

Bell Motor Vehicle Safety Program

Aims To Eliminate Personal Injuries

By Erle S. Miner

Safety Engineer,
American Tel. & Tel. Co.

THE PROBLEM of fostering safe driving has become increasingly important in the Bell System with the growth in traffic on the nation's streets and highways and in the number of telephone company motor vehicles.

The Bell System automotive fleet is the largest fleet of commercial vehicles in the world. These cars, trucks, and miscellaneous rolling stock cover some 600,000,000 miles a year. Traveling the normal distance apart on the highway, they would make a continuous procession across the country from coast to coast.

It is no wonder, then, that the operators of telephone company vehicles who begin each day's work by driving onto the streets, roads, and highways from company garages located in towns and cities throughout the country recognize that they play an important part in demonstrating safe and courteous driving. It is a tribute to the sincere efforts of these employees, resolved to drive each mile during each day alert to the hazards of both vehicular and pedestrian travel, that their success has been demonstrated over and over again by excellent safety records.

One widespread idea that has made the prevention of accidents unnecessarily difficult is the groundless belief that motor vehicle accidents are the inevitable price we have to pay for technological progress in transportation. Experience has proved that such accidents are preventable, and can be decreased by intelligent planning—just as in other fields.

As is generally known, organized fact collecting, analysis, planning, and practical application of findings have made possible real progress in general accident reduction in the Bell System. The same approach is being applied to assure safe operation of the Bell System fleet.

The features which comprise such a comprehensive safety program include: (1) Improved selection, training, and supervision of drivers, and the maintenance of their interest

Bad weather creates hazardous driving conditions, which require watchful driving to overcome. Note the crew compartment behind the cab of this construction truck.

and good attitude; (2) proper care of the vehicles through modern maintenance methods, and (3) design of motor vehicles and equipment to best meet the needs of the business.

Selection of Drivers

The fleet consists of half-ton trucks, of which the installation type is representative; other trucks, ranging in size from three-quarter-ton load capacity up to 5- and even 10-ton capacity; and passenger cars for supervisors in the field. There are, in addition, trailers, pole-hole diggers, pole derricks, platform ladder trucks, tractors, bulldozers, air compressors trenching machines, various kinds of wire and cable plows, and other miscellaneous types of vehicles. All these require operators trained and always alert to assure their safe and efficient operation.

Most of the trucks and cars making up the Bell System fleet have for their main purpose the transportation of men, tools, and materials: and, in many cases, the provision also of power-operated devices for work on the job. Thus the employees who drive vehicles generally do so as only a part, but a very important part, of their regular telephone jobs.

These employees are selected on the basis of being physically and mentally qualified after training to perform safely all the telephone tasks to which they will be assigned. The amount of driving each day by the many drivers necessarily varies widely with geographic conditions, job locations, and types of work. Nevertheless, special emphasis is placed on selecting employees who possess proper physical and mental qualifications and attitudes for developing into satisfactory drivers.

Physical examinations of new employees who are to drive cars generally devote special attention to eyesight, hearing, heart and blood-pressure tests. Then initial road tests are usually given to help determine individual training requirements.

In several companies, it has been found desirable to give drivers periodic physical examinations and road tests. Neither initial nor periodical examinations and tests given have been found to be a "cure-all" for motor vehicle accidents; their primary purpose is to enable individuals to improve themselves as drivers by compensating for any weaknesses, not to deprive them of the privilege of driving. Also, periodic testing of drivers calls to their attention physical defects which may be corrected, and, furthermore, heightens their interest in careful driving.

The relatively few chauffeurs and drivers of the longer-mileage supply and delivery trucks are usually given more rigid physical examinations than the drivers who operate vehicles shorter mileages as a part of their regular jobs. Yet all examinations and road tests must be sufficiently thorough to measure the individual's driving knowledge, skills, and attitudes, so that training and remedial measures may be initiated to offset any weaknesses revealed. The same general procedure which has been found to be essential in determining the training needs of employees who are to become cable splicers, linemen, installers, switchmen, and other craftsmen, applies in the same way to finding out training requirements of the operators of the automotive fleet.

The most important part of the

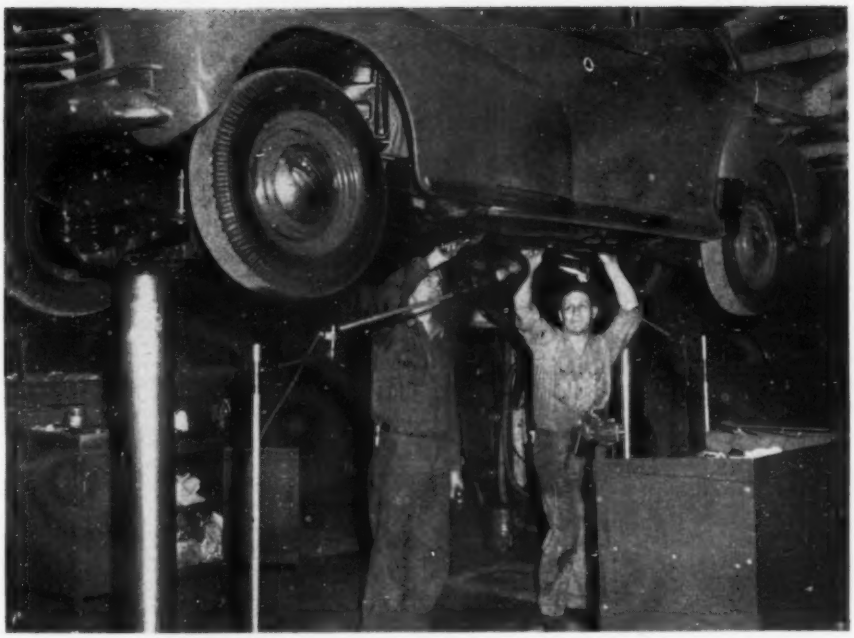
fleet safety program, strongly justified from humanitarian and economic points of view, is that of training. The need for training in safety is never ending. It begins when the employee enters the business, and should continue, as required, to the day he leaves the service.

The method of training employees to drive company vehicles is usually governed by the number employed at one time in a particular location. In cities where centralized schools can be organized, new drivers receive the benefit of classroom instruction in addition to road tests and supplementary training under actual operating situations. Under other conditions, all road tests and necessary training are given by supervisors or other qualified personnel. Many of the latter have completed supervisory training courses on safe driving established at over 30 colleges and universities.

The complete training of drivers is one of the major responsibilities of the supervisor. He must know what is taught at the company schools; he must be familiar with each man's ability, attitude, and habits as a driver; and he must see that the training is done effectively if the safety program is to be successful.

It is common practice to give "refresher" courses on a periodic basis, and seasonal reminders—being particularly careful of children going to school and at play, and alert to winter driving hazards. Again, the method of giving this training depends upon the number of employees at a particular location. A usual method is to provide a suitable classroom and make full use of discussion and visual aids. Many excellent sound motion pictures and strip films are available and have been used extensively. So have model demonstration boards with miniature trucks and cars which portray in a realistic manner the causes of accidents and their prevention. Other training media include blackboard illustrations, charts and diagrams, bulletin boards, posters, company magazines, monthly accident reports, and safety meetings.

Not only is it necessary to be sure that regular operators of the vehicles are fully trained, but the substitute drivers and the engineers and other employess who drive cars occasionally must also be safe, courteous, and efficient. It is also necessary to train construction forces in the safe operation of all the auxiliary motor and power equipment—derricks, winches, cable plows, trailers, pole-hole diggers, tractors, trenching machines, and others—enumerated previously.



Thorough inspection and maintenance of motor vehicles, in company garages from coast to coast, have a major share in the Bell System's safety program.

All this training of 75,000 regular and occasional Bell System drivers has further safety value, since it enables them to operate their own cars properly when off the job and thus add to the over-all safety on the streets, roads, and highways of the nation.

It has been said that a supervisor must be first of all a teacher. This includes not merely initial instruction but "follow-up"—maintaining the employee's interest and correct attitude and many other things necessary to get results. The importance of this is illustrated by one Associated Company division that made a remarkable reduction in accidents after the foremen and other supervisors had been with their drivers on the road for a sufficient time to observe the driving skills and habits of their men and had then retrained them as required. This was a real application of the Bell System "Safety Observation Plan," which has for its purpose the detection of unsafe practices and their correction before accidents occur.

More than 60 percent of the System's motor vehicles are half-ton trucks, of which the installation type is representative.

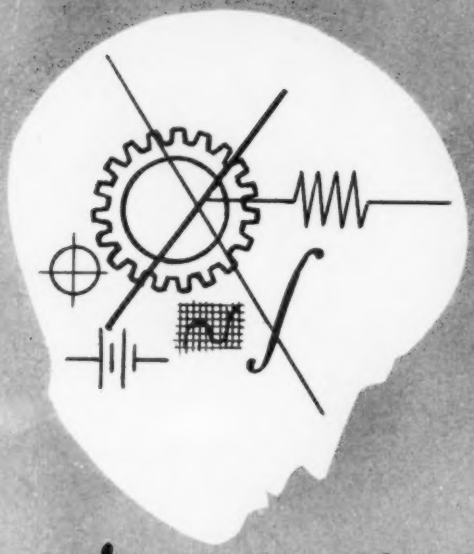
While the success of any safety program is usually a reflection of the interest maintained by management in the prevention of accidents, it is, after all, the first line supervisor or foreman with whom the employee comes in daily contact. It is the foreman who is actively engaged in directing the operations on the job and it is, therefore, necessary that he be properly trained to fulfill his obligations of seeing that his men drive safely. The types of supervisory training which are helpful to the foremen in this endeavor include: Vocational Insructor Training, designed to teach the foreman how to teach; Human Relations Course, and Job Planning.

Creating Driver Interest

An employee may possess the necessary skills and knowledge for safe driving and yet be involved in accidents unless he has the proper attitude and always keeps his mind on his driving when operating his vehicle.

The Bell System companies are using many methods to create and maintain interest and develop the proper attitudes for safe driving. In addition to the means already mentioned, a number of other projects in the fleet safety programs are de-

(Please turn to page 63)



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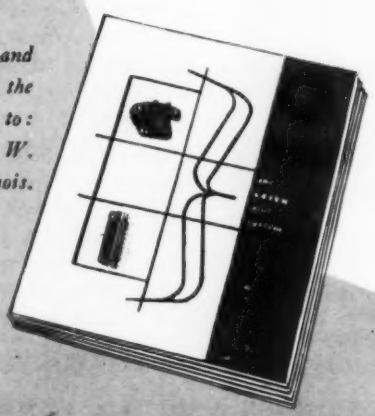

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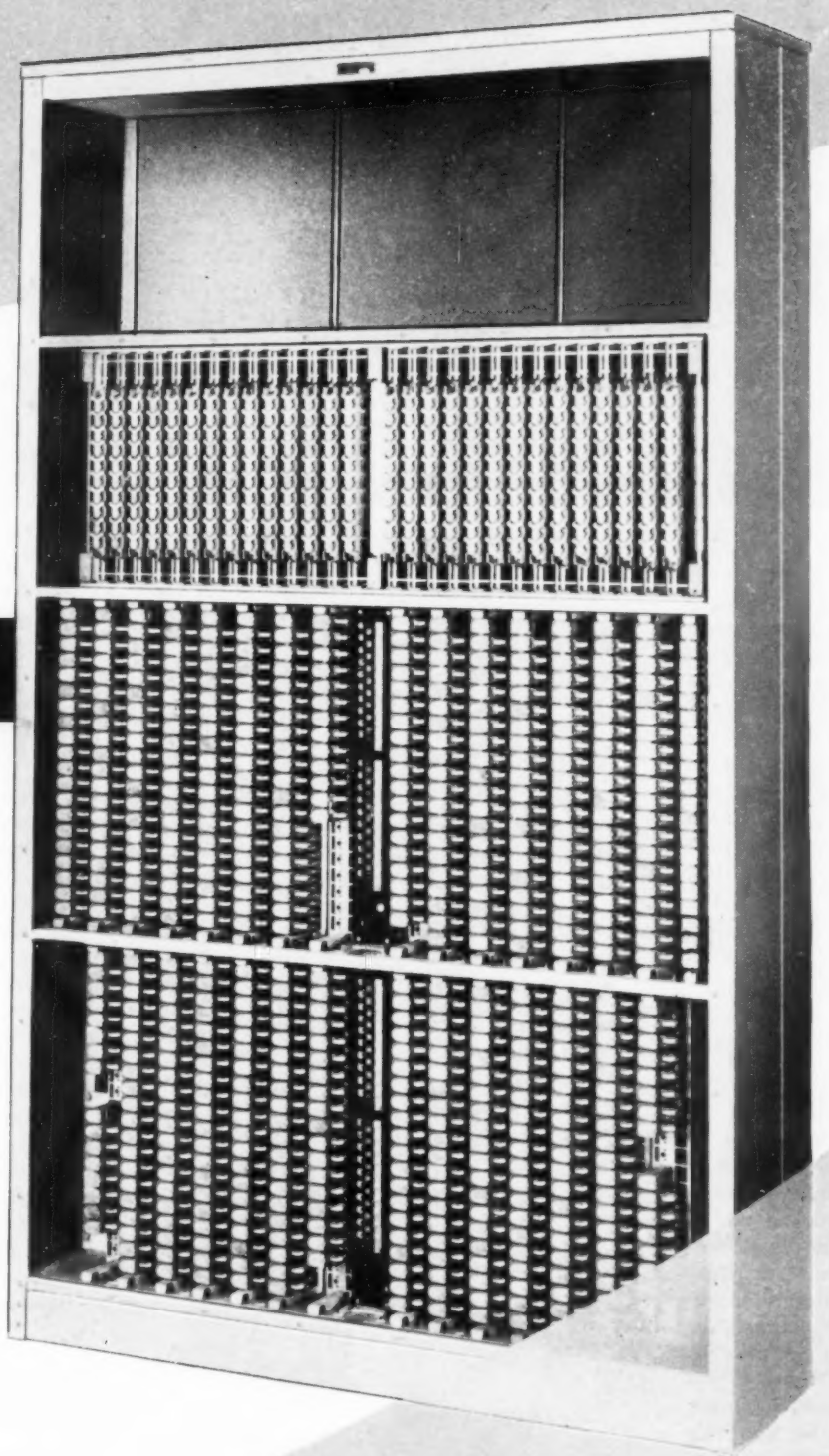
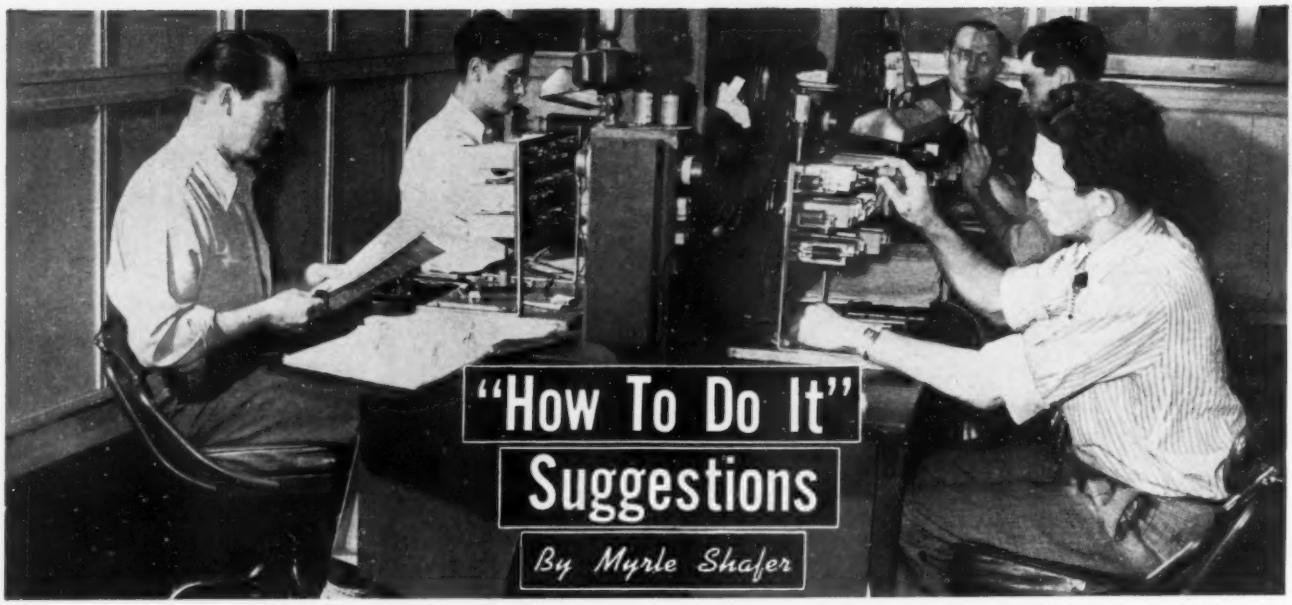


MANUFACTURERS OF TELEPHONES, SWITCHBOARDS & RELATED APPARATUS SINCE 1907.



"How To Do It" Suggestions

By Myrle Shafer

Pneumatic Fish Line

A NEWLY developed pneumatic fish line substantially speeds up "fishing" through underground ducts and is considered a real improvement over the usual rodding methods. The device consists of a fine but strong wire which is forced through the duct by a live rubber cone shaped cap which serves as a piston to pull the wire. In one specific operation in an old 5-inch diameter fiber duct 209 feet long, the wire was fished through in two minutes and 40 seconds. Normally this job would have taken an hour.

Protection Of Underground Cable

THE IMPRESSION seems to prevail in some circles that all problems are solved when wire or cable are buried in the earth. It is true the elements cannot so readily attack telephone plant which is underground, however, other forces just as troublesome may get in their dirty work. Buried wire, for an example, will in some soils and climates be seriously damaged where cracks in the earth due to deep freezing pull the wire insulation in two. Another headache is the tendency for lightning to travel into the ground via trees or fence posts and thence on to buried wire or cable. The human element is responsible for some of the damage. Bulldozing operations, sewer construction, fence construction are all sources of mechanical damage.

Recognizing the many surface hazards that may affect important buried toll cables the Northwestern Bell Telephone Company in Nebraska and Iowa, established some months ago on a trial basis an aerial patrol of the cross state buried toll cable between Omaha and Cheyenne. This patrol was designed to observe any activity near buried cable which might cause an interruption to service. The pilot flying low, usually at a speed of 80 miles an hour and at altitudes as low as 200 feet was able to readily observe special operations along the route of the cable such as bulldozing, terracing, plowing for irrigation ditches, road construction work, and anything which might cause trouble to the cable. Flights were made from Omaha to Cheyenne on Mondays and from Cheyenne to Omaha on Thursdays.

This inspection service was inaugurated on a trial basis pending studies to determine its value. When a pilot observed activities along the route of the cable which he believed might be injurious he immediately drops a note to the person involved in the operation. He also drops a note to the nearest telephone truck. The telephone men then move to the location in question and visit with the farmers or other regarding the location and depth of the cable. A special container is used for the note dropped.

"Home-Made" Digger Digs Holes in 3 Minutes

A RECENT letter from Fred L. Mayer, manager of the Mt. Pulaski (Ill.) Telephone & Electric Co. describes a home made, low cost, pole hole digger that the Mt. Pulaski company has found most efficient.

Mr. Mayer states that the unit is a typical farm tractor digger but using a larger, 12" x 6' auger. The digger is hauled to the job as shown in Fig. 2, with the derrick telescoped to a height of 12 ft. At the job the digger is then lowered to the ground and the derrick lowered to a horizontal position by the winch. The derrick is then extended to the maximum length, which in the digging position is 18 ft. The derrick is then raised by the winch, the cable

Fig. 1—Maximum length of digger in digging position is 18 ft.

Fig. 2—Digger is hauled to the job with derrick telescoped to height of 12 ft.

run to the digger, through a pulley to the derrick and back again to the digger. This arrangement regulates and controls the digging speed of the digger, as it can only dig as fast as the cable unwinds from the winch. In this way the digger never shakes or puts an undue strain on the equipment when unfavorable soil conditions are encountered.

When the desired depth is reached, the auger is withdrawn from the hole, still revolving in the same clockwise direction as it was when it was digging. This again relieves the equipment from unnecessary strain. To accomplish this a transmission was installed between the power takeoff and winch, and controlled from the cab. A shaft was run from the power takeoff to the transmission then to the winch and on back to another transmission installed at the rear of the truck. The operation then, of the two transmissions and the winch will give any number of different digging operations.

Mr. Mayer states that "it takes about 10 minutes to assemble the digger and derrick. The derrick when not extended and in use is either left in the short telescoped position or it can be pushed over and laid down into the truck bed. We average about three minutes per hole including the time used in moving the truck from one hole to the other. . . ."

Cable "Breakdown" Precedures

THE USE of high d-c voltages to break down moisture faults in telephone cables is becoming very popular. Difficult moisture faults can now be located with the greatest of ease by the combination of a flasher breakdown unit used in conjunction with amplified tone testset. Recent tests conducted using equipment of a special type shows that in some instances the reversal of the connections to the cable flash set so as to impose a reverse polarity on the wires of the cable pair being broken down will lower the breakdown voltage required. In one instance with the terminals connected one way the faulty pair was able to stand up to 600-volts battery but readily broke down when the connections to the cable pair were reversed and the voltage raised to 450-volts. This is something to remember when using this type of testing equipment.

Above Ground Splicing Of Underground Cable

THE BELL SYSTEM has adopted a new method of splicing "plowed-in" cables which they feel to be a considerable improvement over previously employed methods. The former method consisted of plowing-in the cable and digging an open pit at splice points. The new method consists of bringing the cable above ground at splice points and the splices are then made and later lowered into a trench which is dug after the splice is completed.

It is believed that the new method offers substantial advantages, viz: (1) Gas pressure readings and copper jacket to sleeve measurement can be made without digging 30 or 40 inches to uncover the cable ends, (2) Time is saved and the splicer can go to work without delay on arrival at the splicing point, (3) The working conditions are much more agreeable to the splicer as pits are often wet and muddy, and (4) The hazardous conditions of the open pit are eliminated.

Chewer-Upper Aids Tree Branch Disposal

WHAT TO DO with the brush that accrues from tree trimming operations inside city limits has been almost as much of a problem as what to do with old razor blades.

The Asplundh Tree Expert Co. has solved the problem by devising a "Chipper" which makes "small ones out of big ones". Essentially a motor driven "chewer upper", it reduces the limbs which are fed into a trap door in the side of a large van type box truck into small chips which can be stored in small space and later hauled to the city dump. Because of its ability to reduce bulky branches into small space it speeds up tree trimming operations as less frequent trips to the dump are required.

Soldering Tool Uses Resistance Heating Principle

A NEW LIGHT duty soldering tool that operates on the resistance heating principle is proving in on many maintenance and repair jobs, doing the job quicker, safer and easier, eliminating fire hazards and discolored work.

Touching the work with the soldering tool (Fig. 3) completes the secondary power circuit and causes the part touched to heat almost instantly. A handy thumb switch permits close heat control. The unit conserves

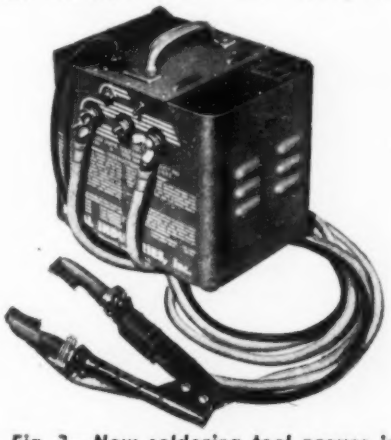


Fig. 3—New soldering tool proves in on maintenance and repair jobs.

power, drawing current only when the soldering tool is in direct contact with the part to be soldered, and is ideal for use in inaccessible places and inflammable surroundings.

A complete set of soldering tools or attachments for handling all types of work includes a "plier" attachment for sweating and unsweating copper tubing, soldering lugs, terminals and other work of that type; a "fork" attachment with two 3" electrodes for reaching into restricted places such as switch boxes, electrical tools and equipment; a "pencil" attachment with one 3" carbon electrode for spot soldering, and light seam soldering. These attachments have lightweight, phenolic handles that are sturdy and are designed for a cool, sure grip. Electrodes are replaceable.

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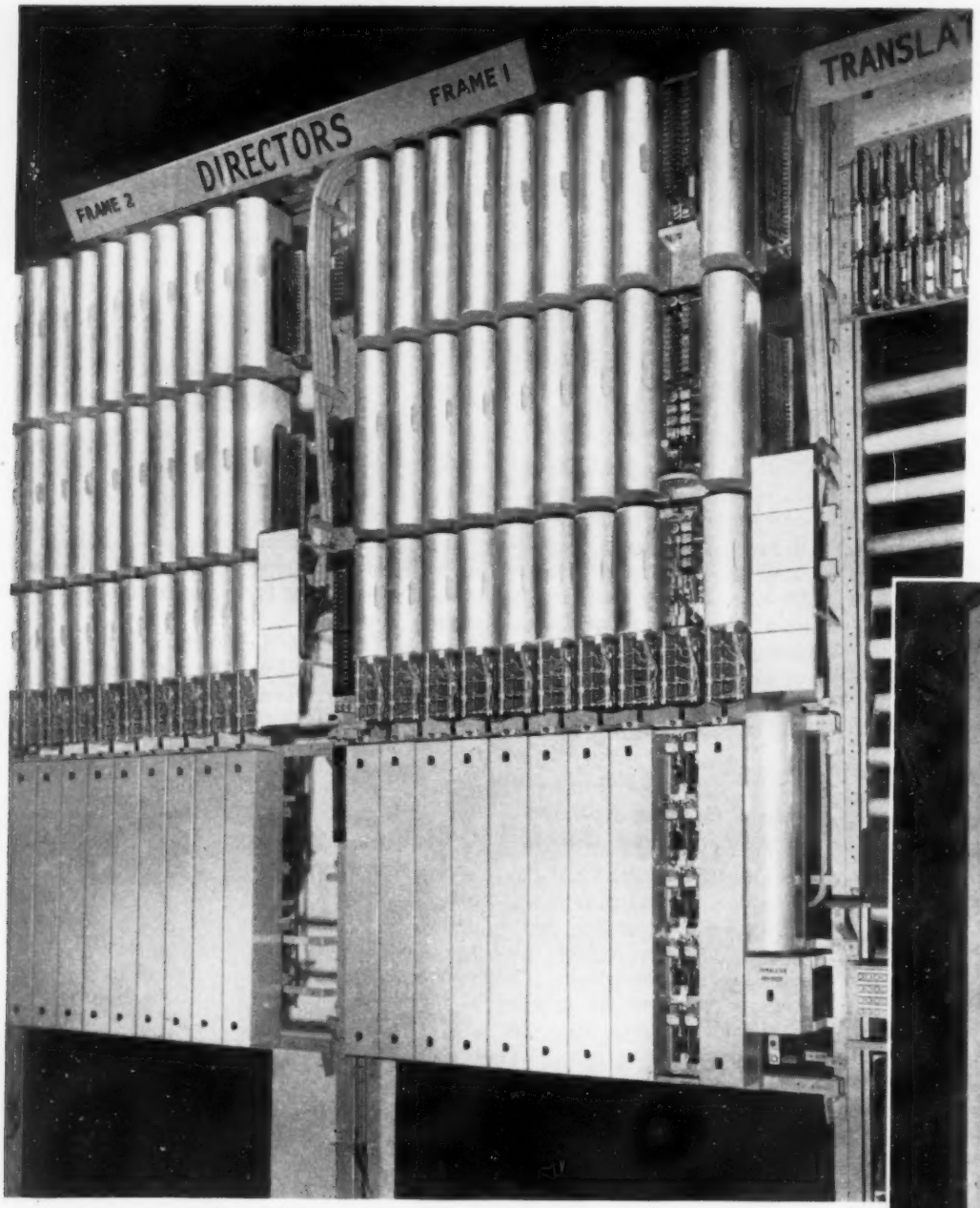
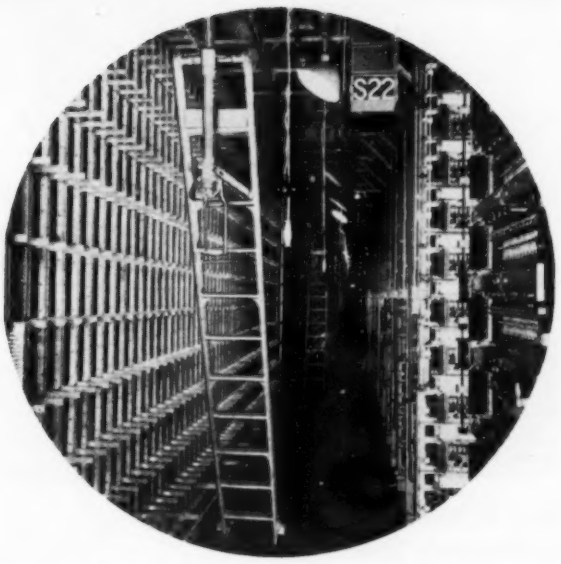
Auto



Strowger Automatic Director frames in the San Fernando, Calif., Exchange of California Water & Telephone Co.

Right, the Director Monitor panel in the San Fernando Exchange.

...ger ...matic Director



View of the London Monarch Exchange showing a section of the Strowger Automatic Director panels.

...agic Brain" OF MODERN TELEPHONY

Developed originally by Automatic Electric engineers in 1923, for use in the world's largest metropolitan area—that of London, England—the Strowger Automatic Director has proved to be truly the "Magic Brain" that makes possible the most modern types of telephone service. It translates dialed impulses into the specific "directive" required to complete a desired connection, via as many tandem trunking exchanges as may be required. It sets up an "alternate" route if necessary, and if all routes are busy or otherwise unavailable, it instantly releases the connection and returns "busy tone."

Performing these operations automatically and almost instantaneously the Director makes possible:

1—METROPOLITAN AREA SERVICE, with a universal numbering plan

2—AUTOMATIC TOLL TICKETING, on "short-haul" (AB) toll circuits

3—LONG-DISTANCE OPERATOR DIALING in regional or nation-wide networks

Versatile Strowger Automatic equipment provides the Automatic Director wherever a Register-Translator-Sender is needed—and omits it in those cases where more simple requirements make it unnecessary. Whatever YOUR requirements may be, you'll find they are met most satisfactorily with Strowger Automatic equipment — including the Director if required.

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Current COURT and COMMISSION Activities

Rate Adjustment Approved For Freeport, Minn.

Freeport (Minn.) Telephone Co. has been granted authority to change its schedule of telephone rates and charges at Freeport. The class of service for which the company proposed rate revisions, with present and approved rates, are shown below:

Class of Service	Present Gross Rates	Approved Gross Rates
Individual Line Business, Common Battery	$3.00(a)	$3.75(a)
Individual Line Business, Magneto	2.50(a)	3.25(a)
Two-party Line Business, Magneto	2.25(a)	3.00(a)
Individual Line Residence, Common Battery	2.00(a)	2.50(a)
Individual Line Residence, Magneto	1.25(a)	2.00(a)
Four-party Line Residence, Magneto	—	1.75(a)
Rural Multi-party Residence, Metallic	1.25(a)	2.00(a)
Rural Multi-party Business	—	2.50(a)
Handset Individual Line Business, Magneto	.25Net	—
Extension Stations, Business	—	1.00Net
Extension Stations, Residence	—	.75Net
Extension Bell	—	.25Net
Extension Gong	—	.50Net

Proposed: In addition to the above charges an excess mileage charge of 50 cents per month for each quarter mile or fraction thereof for Individual Line Service beyond the local base rate area.

(a) All rates are to be billed monthly in advance and a discount of 25 cents to be allowed on all gross rates if paid on or before the 15th of the month in which service is rendered.

Revised Rates Approved For Grove Hill, Ala.

The Alabama Public Service Commission approved application of C. T. Harrison, d/b/a Grove Hill (Ala.) Telephone Co. for a revised rate schedule applicable to local exchange service rendered from the Grove Hill exchange.

The petition filed with the commission on December 23, 1948 and approved December 30, 1948, stated that the company serves some 225 subscribers of which number some 25 are located on subscriber owned lines and requested approval of increase in rates to all subscribers, except those owning their own lines, effective for bills dated January 1, 1949. The petition shows that the requested increase was necessary in order to provide for operating expenses, depreciation taxes and some compensation to the owner and manager; the business being presently operated at a loss. In support of the petition a statement signed by a large majority of the subscribers affected by the increase, stated that the company has improved service and requested that the Commission grant the petition. Copy of a resolution to similar effect passed by the Town Council of Grove Hill was also submitted.

Telephone rates and charges approved by the Commission and applicable to all subscribers served through company owned lines and equipment are:

Monthly Flat Rates

Urban Service (Inside Grove Hill Corporate Limits)

Common Battery	Monthly Rate
Business, 1-Party	$4.00
Residence, 1-Party	3.00
Residence, 2-Party	2.50
Residence, 4-Party	2.00
Magneto	
Business, 1-Party	3.50
Business, 2-Party	3.00
Residence, 1-Party	2.50
Residence, 2-Party	2.00
Residence, 4-Party	1.75

Urban Service (Outside City Limits)
The above rates for service inside the corporate limits shall apply plus the following extra mileage charges based on airline distance subscriber is located beyond the corporate limits.
1-Party—40c per ¼ mile or fraction thereof
2-Party—20c per ¼ mile or fraction thereof
4-Party—10c per ¼ mile or fraction thereof

Rural Line Service (Outside City Limits)
8-Party—Residence—$2.00 per month for 1st two miles outside City Limits plus 25c for each additional two miles or fraction thereof.

General Service

Extension Telephone	$1.00
Extension Bell	.25

Installation and Miscellaneous Charges

Business Installation	$3.00
Residence Installation	2.50
Inside Move in Same Building	2.50
Outside move, change of address, no phone in place, same as installation charge	2.50
Reconnect left in station in same location	1.50
Change Location or Telephone	2.50
Change Equipment, Type of Phone	3.00
Install Extension Telephone	2.00

Floodwood (Minn.) Tel. Co. Rate Adjustment Approved

Application of the Floodwood Telephone Co. for authority to change its schedule of telephone rates and charges at its Floodwood exchange was recently approved by the Minnesota Railroad & Warehouse Commission.

Floodwood Township had objected to the proposed increase in Service Station Switching rates on the grounds that: (1) The five mill tax collected by the Township for the maintenance of its lines was not sufficient to meet the increase, and (2) that the service rendered by the Floodwood Telephone Co. was not adequate.

In answering the first objection the Commission referred to an Attorney General's opinion relating to this subject which reads as follows:

"The Railroad and Warehouse Commission has asked us to answer your letter of October 26, 1925, inquiring whether your town board may lawfully pay from the town fire fund certain monthly charges made by the Floodwood-Brookston Telephone Company for exchange service furnished to patrons on your telephone line.

"We answer your inquiry in the negative. In our opinion, such charges cannot be legally paid from your fire fund, raised by taxation. Such payment would amount to the use of public funds primarily for private service, and only incidentally (if at all) for the prevention of forest fires, etc., as permitted by section 1 of Chapter 439, Laws 1921."

With reference to the second ob-

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Since 1871

KLEIN

"Pole Master" CLIMBERS*

Gaff is in line with the leg bone.

"solid comfort" for linemen

■ There's greater comfort for the lineman in the *new* Klein "Pole Master" Climbers. Designed as a real working pair . . . with one climber especially for the right and the other for the left . . . they have an extra wide stirrup for greater arch support.

Leg irons are tough and dependable, yet flexible and tapered in width and thickness. Ankles and calves get better support . . . chafing is practically eliminated. And the scientifically offset shank brings gaff in proper line with leg bone, providing real security . . . solid comfort.

"Pole Master" Climbers are forged from high quality, special alloy steel. A wrought, triangular-shaped ring at ankle assures proper set of ankle strap and provides additional comfort . . . safer, longer strap life. "Pole Masters" . . . like all Klein climbers . . . are individually tested and suitable for linemen of any weight.

1945 POLEMASTER CLIMBERS Riveted Top Wrought Loop, Triangular Ring at Ankle (average weight) 2⅞ lbs. per pair. (With this Climber, use Ankle Strap No. 5301-16 or No. 5301-26).

** Matched Right and Left Climbers*

ASK YOUR SUPPLIER
Foreign Distributor: International Standard Electric Corp., New York
Since 1857

KLEIN TOOLS EST. 1857 TRADE-MARK REG.

Mathias KLEIN & Sons
Established 1857 — Chicago, Ill., U.S.A.
3200 BELMONT AVE. CHICAGO 18, ILL.

jection, the company introduced its Exhibit No. 3. This exhibit was prepared by a qualified telephone engineer and indicated that there was an excessive transmission loss on all of the township lines. The Commission order stated that testimony was offered to the effect that some of these lines carried up to 33 subscribers, "all of which contributes to inadequate service for which Applicant is not responsible."

Company exhibits showed that it sustained a loss of $1,199.06 under the present rates for Service Station Switching and will have a loss of $505.01 under the proposed rates for this service.

The classes of service for which the company proposed rate revisions together with present and approved rates, are as shown below:

Class of Service	Present Gross Rates	Approved Gross Rates
Individual Line Business	$3.25(a)	$4.25(a)
Two-party Line Business	2.25(a)	3.25(a)
Individual Line Residence	2.00(a)	2.50(a)
Two-party Line Residence	1.75(a)	—
Four-party Line Residence	1.50(a)	2.00(a)
Rural Stations Owned, Metallic, Residence	1.50(b)	2.25(a)
Extension Stations, Residence	—	.75Net
Extension Gong	—	.50Net
Service Switching Stations	.50Net	.75Net

(a) All rates are to be billed monthly in advance and a discount of 25 cents to be allowed on all gross rates if paid on or before the 15th day of the month in which service is rendered.

(b) Rural Multi-party rate payable quarterly in advance with a discount of 75 cents if paid on or before the 15th of the first month of the quarter; 50 cents if paid on or before the 15th of the second month of the quarter; and 25 cents if paid on or before the 15th of the third month of the quarter.

Sylvania, Ga., Rates To Be Increased

Application of the Sylvania Telephone Co. for authority to increase rates for exchange telephone service at Sylvania, Georgia, to become effective upon conversion to automatic dial operation, has been approved by the Georgia Public Service Commission.

Company witnesses testified that investment after the installation of new dial system would be $139,736.51, with an indicated depreciation reserve of $17,543.69 or net plant value of $122,192.82. Additional revenue of $7,704 derived from the proposed rate increases, together with an additional depreciation expense on new plant in amount of $3,209.47, additional plant employee expense of $1,800 and a saving in traffic expense of $2,874 indicated that the net yearly income of the company would be $7,234.89, or a return of 5.92% on the rate base of $122,192.82. Company witnesses also testified that a corporation may be organized as this would provide a source of capital funds under a

mortgage, in which event the portion of the proposed long term debt assignable to the Sylvania exchange would be $58,400 at an interest rate of 4% per annum with resulting annual interest of $2,336.

The commission stated that the income statement submitted by company "appears to contain certain errors which should be corrected." "Exchange Revenue," the commission said, "obviously includes the 15% federal tax, while toll revenue appears to include both federal tax and the share of revenue assignable to Southern Bell Telephone & Telegraph Co. These tax errors likewise appear in the fixed tax expense account and the payment of toll revenue to the Bell Company obviously is included in the Rental Account as the Sylvania Telephone Company does not rent equipment or facilities. These corrections with adjustments reflecting the effect of conversion to dial service and hereinafter outlined, indicate a net profit for the year ending December 31, 1947 of $1,666.36, and the adjusted figures indicate a net profit of $989.85.

In order to provide adequate net earnings, the Commission authorized a schedule of revised rates and has also considered revenue which will be derived from 35 held orders at an estimated average annual revenue of $45.00 per station. The application of the authorized increases in rates to the number of stations as of December 31, 1947 will result in an annual increase in revenue of $7,389 and the revenue from the held orders on file will amount to $1,575 or a total annual increase in revenue of $8,964. This annual increase in revenue of $8,964, together with the indicated net income for 1947 of $989.85 will result in net earnings of $9,953.85.

The commission stated that the estimated future net revenue of $9,953.85 per annum when related to the estimated net investment after conversion of $122,192.82 "may appear somewhat liberal, but it appears proper that consideration should be given to higher costs of materials still to be installed for conversion and the probability of inaccurate estimates of future expenses in connection with the operation of an automatic dial exchange. Furthermore, this statement assumes that all held orders for service will be filled while some may be located in rural areas requiring substantial additional investment to serve and some prospective subscribers may not contract for service when it is available. . . ."

The following schedule of maximum rates for classes of services indicated was approved by the commission:

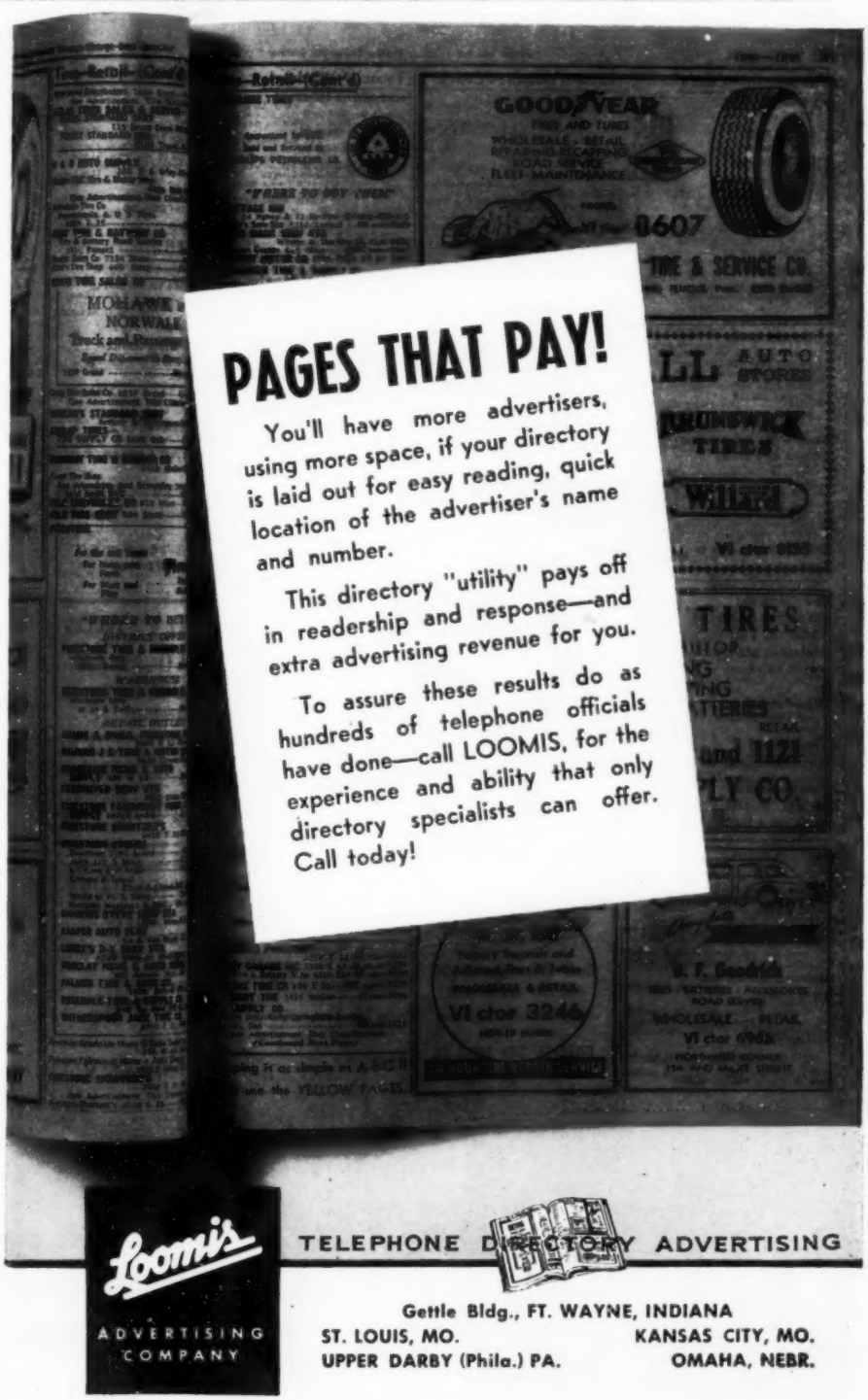
Class of Service	Rates Per Month
Business 1-Party	$5.00
Business 2-Party	4.00
Business Extension	1.25
Residence 1-Party	3.25
Residence 2-Party	2.50
Residence Extension	1.00
Business Rural Multi-Party	2.50
Residence Rural Multi-Party	2.00

The above rates for rural service shall apply to all such service provided within two miles of exchange limits of Sylvania, Georgia and for distances beyond two miles, the following added charges shall apply:

Distance from City Limits	Additional Charge Per Month
2 to 4 Miles	$0.25
4 to 7 Miles	.50
7 to 10 Miles	.75
10 to 15 Miles	1.00
Each additional 5 miles	.25

Rate Adjustment Approved For Remer, Minn.

The Minnesota Railroad and Warehouse Commission recently approved


PAGES THAT PAY!
You'll have more advertisers, using more space, if your directory is laid out for easy reading, quick location of the advertiser's name and number.
This directory "utility" pays off in readership and response—and extra advertising revenue for you.
To assure these results do as hundreds of telephone officials have done—call LOOMIS, for the experience and ability that only directory specialists can offer. Call today!
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UPPER DARBY (Phila.) PA.
OMAHA, NEBR.

application of the Remer Rural Telephone Co. for authority to change its schedule of telephone rates and charges at Remer. The class of service for which the company proposed rate revisions, together with present and approved rates, are shown below:

Class of Service	Present Gross Rates	Approved Gross Rates
Individual Line Business	$2.75(a)	$4.25(a)
Individual Line Residence	1.75(a)	2.50(a)
Two-party Line Residence	—	2.25(a)
Four-party Line Residence	—	2.00(a)
Rural Stations Owned, Grounded	1.25(a)	—
Rural Stations Owned, Business	—	3.00(a)
Rural Stations Owned, Residence, Metallic	—	2.25(a)
Season Rate:		
Rural Multi-party, Bus. (6 months minimum)	—	3.00(a)
Rural Multi-party, Res. (6 months minimum)	—	2.25(a)
Extension Stations, Business	—	1.00Net
Extension Stations, Residence	—	.75Net
Service Switching Station	.50Net	.75Net
Hand Set Charge—Local or Rural	.25Net	**See below

Proposed: An excess mileage charge of 50 cents per month per quarter mile or fraction thereof for Individual Line Service beyond the local base rate area.

Proposed: Temporary disconnections at one-half the regular rate of service.

(a) All gross rates to be billed monthly in advance with a discount of 25 cents to be allowed if paid on or before the 15th of the month in which service is rendered.

**An additional charge of 25 cents per month for a hand set instrument to subscribers on local party lines and subscribers on rural multi-party lines.

Lake Crystal Tel. Co. Granted Rate Increase

The Minnesota Railroad And Warehouse Commission has approved application of the Lake Crystal Telephone Co. for authority to change its schedule of telephone rates and charges at its Lake Crystal and Cambria, Minn., exchanges.

The classes of service for which the company proposed rate revisions, with present and approved rates, are:

Class of Service	Present Gross Rates Both Exchanges	Gross Rates Lake Crystal Common Battery	Approved Gross Rates Cambria, Dial
Individual Line Business	$3.25(a)	$4.25(a)	$4.50(a)
Two-party Line Business	2.75(a)	3.75(a)	4.00(a)
Individual Line Residence	1.75(a)	2.50(a)	2.75(a)
Two-party Line Residence	—	—	2.25(a)
Four-party Line Residence	1.50(a)	2.00(a)	—
Rural Stations Owned, Bus., Metallic	2.25(b)	3.00(b)	3.25(b)
Rural Stations Owned, Res., Metallic	1.75(b)	2.25(b)	2.50(b)
Extension Stations, Business	.75Net	1.00Net	1.00Net
Extension Stations, Residence	.50Net	.75Net	.75Net
Add'l. charge, Handset	.25Net	—*	—*
Extension Gong	—	.50Net	.50Net

Proposed: An excess mileage charge of 50 cents per month for each quarter mile or fraction thereof outside of the base rate area for Individual Line service.

(a) All local rates to be billed monthly in advance and a discount of 25 cents per month will be allowed on all gross rates paid on or before the 20th day of the month in which service is rendered.

(b) All rural rates to be billed quarterly in advance and a discount of 75 cents will be allowed on all gross rates if paid on or before the 20th day of the first month of the quarter, 50 cents if paid on or before the 20th day of the second month of the quarter, and 25 cents if paid on or before the 20th day of the third month of the quarter in which service is rendered.

*25 cents extra per month for handsets to Four-party Line residence subscribers and to subscribers on Rural Multi-party lines.

Deer River, Minn., Rate Adjustment Approved

The Minnesota Railroad and Warehouse Commission recently approved application of the Deer River Telephone Exchange for authority to change its schedule of telephone rates and charges at Deer River.

Classes of service for which the company proposed rate revisions, with present and approved rates, are:

Class of Service	Present Gross Rates	Proposed Gross Rates
Individual Line Business	$3.25(a)	$4.00(a)
Two-party Line Business	2.25(a)	3.50(a)
Individual Line Residence	2.25(a)	2.75(a)

PRESSURE TREATED
Southern
Yellow Pine Poles
RESIST THE YEARS

Nature grew these sturdy Southern yellow pines for telephone poles! Taylor-Colquitt adds the finishing touch by pressure-treating them with Grade I creosote oil after they have been scientifically dried to remove excess weight and moisture. Taylor-Colquitt Southern yellow pine poles are free from excess bleeding—last longer under all conditions than ordinary creosoted poles.

RECOMMENDED AND DISTRIBUTED BY

AUTOMATIC ELECTRIC
SALES CORPORATION

1033 W. VAN BUREN ST., CHICAGO 7, ILL.

Two-party Line Residence	1.75(a)	2.50(a)
Four-party Line Residence	—	2.25(a)
Rural Multi-party Metallic, Business	2.25(a)	3.50(a)
Rural Multi-party Metallic, Residence	1.75(a)	2.25(a)
Extension Stations, Business	.50Net	1.00Net
Extension Stations, Residence	.50Net	.75Net
Societies	1.75Net	2.25Net
Season — Rural Residence (Minimum charge)	12.00Net†	16.00Net†
Resort Stations	36.00Net†	39.00Net†
Service Switching Station	7.20(b)†	.75Net*

(a) All company owned stations to be billed monthly in advance and a discount of 25 cents will be allowed on all gross rates if paid on or before the 15th day of the month in which service is rendered.

(b) Billed quarterly in advance and a discount of 10 cents per month to be allowed if paid during the first month of the quarter in which service is rendered.

†Per year.

*Service Switching Stations are to be billed quarterly in advance and payment is due in the first month of the quarter in which service is rendered.

Increased Rates Approved For Verndale, Minn.

Application of the Verndale Telephone Exchange for authority to change its schedule of telephone rates and charges at Verndale, has been approved by the Minnesota Railroad and Warehouse Commission.

Classes of service for which the company proposed rate revisions, with present and approved rates, are:

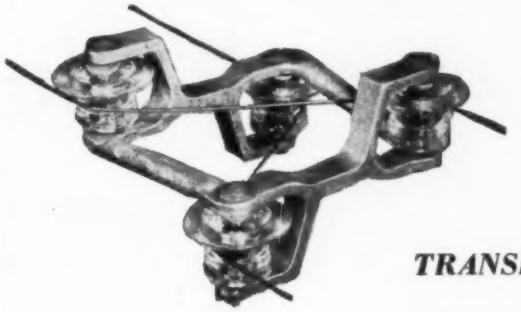
Class of Service	Present Gross Rates	Approved Gross Rates
Individual Line Business, Magneto	$2.75(a)	$3.75(a)
Individual Line Business, Common Battery	—	4.00(a)
Two-party Line Business, Magneto	—	3.25(a)
Two-party Line Business, Common Battery	—	3.50(a)
Individual Line Residence, Magneto	1.75(a)	2.75(a)
Individual Line Residence, Common Battery	—	3.00(a)
Two-party Line Residence, Magneto	—	2.50(a)
Two-party Line Residence, Common Battery	—	2.75(a)
Four-party Line Residence, Magneto	—	2.25(a)
Four-party Line Residence, Common Battery	—	2.50(a)
Rural Multi-party—company owned	1.75(a)	2.50(a)
Rural Line Business	—	3.00(a)
Extension Stations—Business	1.00Net	1.25Net
Extension Stations — Residence	—	1.00Net
Rural Multi-party switching charge	.40Net	.75Net
Hand Sets	.25Net	.25Net
Desk Sets	.25Net	.25Net
Extension Bells	.25Net	.25Net
Extension Gongs	—	.50Net

(a) A discount of 25 cents per month to be allowed on all gross rates if paid on or before the 15th of the month in which service is rendered.

Approved Service Connection Charges	Telephone Not in Place	Telephone in Place
Business	$2.50	$2.00
Residence	2.00	1.50
Extension	1.00	None
Inside Moves—Same Room		$1.00
Inside Moves—Another Room		1.50
Change in Type of Equipment		1.00
Reconnection Charge for Non-payment—		
Within City Limits		1.50
Outside City Limits		2.00

CARRIER CIRCUIT TRANSPOSITIONS

The Case *SPAN* Transposition Bracket—a new idea for carrier circuit transpositions *between poles.*

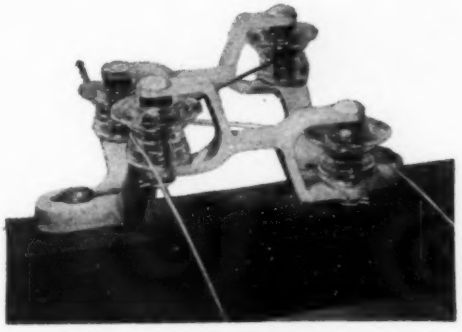


The CASE SPAN TRANSPOSITION BRACKET

• Ideal for carrier circuits and long-span rural construction • transpositions at exact positions • easy to install • no cutting of line wires • saves number of poles in new line construction, in reconstruction, and in pole changes on constructed lines • fabricated from magnesium, lightest of all structural metals • weighs less than 3 lbs. complete with insulators

The Case *POINT* Transposition Bracket—a worthy companion to the Case *SPAN* Transposition Bracket—offers an improved method for carrier circuit transpositions *on located poles*

The Case *POINT* Transposition Bracket *reduces tensioning costs* in stringing, or restringing wires . . . the glass insulators *roll*, preventing binding in tensioning, allowing free movement of the wire at the transposition point . . . the insulators come equipped with rubber bushings which maintain line circuit operation in event of glass breakage . . . easy to install . . . fabricated from magnesium, lightest of all structural metals . . . weighs less than 4 lbs. complete with insulators



CASE POINT TRANSPOSITION BRACKET

AUTHORIZED DISTRIBUTORS U. S. A.:

Joslyn Mfg. & Supply Co., Chicago 6, Illinois
Gulf Coast Electric Supply Co., Houston 3, Texas
Buckeye Telephone & Supply Co., Columbus 6, Ohio
Maydwell & Hartzell, San Francisco 3, Calif.
(Branches: Los Angeles 13, Calif.; Portland 9, Ore.; Seattle 4, Wash.)

CANADA: Manufactured by N. Slater Co. Ltd., Hamilton— Distributed by Northern Electric

Write for Informative Pamphlet

Export Distributors: Ericsson Telephone Sales Corporation 101 Park Avenue, New York 17, N. Y.

TRANSANDEAN ASSOCIATES, INCORPORATED

Consulting Engineers and Constructors
(COMMUNICATION POLE LINES)

30 Broad Street **New York 4, N. Y.**

It's for you!
The advertisement on the opposite page tells a story that is true of the whole telephone industry. It's a reminder that the telephone is an important member of the family. This timely message, appearing in national magazines during February, also highlights how much the telephone has increased in value; how little it has increased in price.
AN ADVERTISEMENT OF THE
BELL TELEPHONE SYSTEM

When the Telephone Rings

Pop hopes it's a call from Brown & Smith, saying that business deal is OK.

Mom's expecting a call from her mother.

Sis will go into a tailspin if it isn't Harry, who hasn't yet asked her for a Saturday night date.

Buddy hopes it's Joe, asking if he can come over.

Family Story. The story of Pop and Mom and Sis and Buddy is typical of many a family throughout the country. It shows the two-way value of your telephone service. The calls you get are as important as the ones you make—sometimes more so.

Greater Value. Your telephone is more valuable today because there are nearly 40% more telephones—about 9,000,000 more—than three years ago.

You Can Reach more people and more can reach you. The cost is small per call and exceedingly small in relation to the value of each call.

Rates Are Still Low. Telephone rate increases are much less than the increases in most things you buy. They are far less than past increases in telephone wages, and other higher costs of providing service.

In fact, telephone rate increases average only a penny or so per call.

BELL TELEPHONE SYSTEM

Automatic Electric Type 35

Cable Terminals

GIVE YOU MAXIMUM PROTECTION

Automatic Electric Type 35 Protected Cable Terminal provides the best protection you can get. All metal, with the exception of fuses and jumper-wire strips, the Type 35 has a high potential safety factor and assures complete cable terminal protection at all times. Available in 11, 16 and 26 pair, less stubs. Order today for immediate delivery.

Cat. No.	Description
SA-38	11 pair less stub
SA-40	16 pair less stub
SA-42	26 pair less stub

AUTOMATIC ELECTRIC

Originators and Developers of the Strowger Step-by-Step "Director" for Register-Sender-Translator Operation . . . Machine Switching Automatic Dial Systems

Makers of Telephone, Signaling and Communication Apparatus . . . Electrical Engineers, Designers and Consultants

Distributors in U. S. and Possessions

AUTOMATIC ELECTRIC SALES CORPORATION, 1033 W. Van Buren St., Chicago 7, U.S.A.

Export Distributors: INTERNATIONAL AUTOMATIC ELECTRIC CORPORATION

INVEST YOUR "PIN MONEY" IN THE BEST

LOCUST PINS

Locust wood is practically impervious to decay and is impenetrable to moisture. Because of its close-grained hardness locust can be machined into strong, long lasting pins of standard specifications that can be counted on to retain their size and shape.

OAK BRACKETS

Oak pole brackets of unquestioned quality are in demand now as never before in the face of the qualifications necessary in the equipment and materials needed today to "keep 'em talking." Present day maintenance and repair have every reason to demand and get only the best.

GLASS INSULATORS

Research and experiment have produced in Hemingray insulators a glass insulator that is better than any ever before offered.

Non-porous, non-deteriorating, uniform coefficient of expansion and high mechanical as well as high dielectric strength are some of the many qualities that rank Hemingray the "best on the line."

BUCKEYE TELEPHONE and SUPPLY CO.
COLUMBUS 6, OHIO

BATTERY WATER
Right Off Your Tap!

HYDRION
DEMINERALIZER

Now it is practical for every central office to have pure water for the battery installation. With the advent of ion-exchange resins, mineral-free water equal in chemical purity to distilled water can be obtained directly off any water supply as needed . . . . why continue a poor practice of using tap water!

- **No heat, no power involved**
- **Simple to use**
- **Utilizes throw-away cartridges**
- **Water purity 10 ppm**
- **Low cost**

Write for Folder HT

A. E. TOMKIN & CO.
1828 Columbia Rd., N.W.
Washington 9, D. C.

QUESTIONS and ANSWERS

EDITED BY

JAY G. MITCHELL

Q. We are using Burial Wire for short runs. We notice on two or three thousand foot runs, when we connect a set on open circuit, the set responds as if it was closed, yet, the circuit we have buried tests clear of ground and open. Can you tell me what effect this responding would have on a circuit two or three times this length? We have installed six of these circuits, all clear and working fine.

A. It is impossible to be certain of an answer to this inquiry without a definite designation of the type of wire used. It is assumed that wire purchased as SURPLUS WAR SUPPLY is the kind in question. Will you please send in a short sample of the wire in question or, if one is available, send in the tag attached to the wire when it was received and giving the code number. How long is the longest circuit that you are now operating with this wire. What is meant by the set responding as if the circuit is closed and what kind of testing equipment is being used to test the circuit!

Q. Inclosed is a sketch of a proposed toll line between our company at Fairmount to Summitville. This toll line is to be placed on existing pole line leads that are now in use. At the present we have one circuit to Summitville which is number 12 iron wire (old) and one number 12 N.B.S. copper (old) to Alexandria which also terminates at Summitville. Our plan is to replace the iron with number 12 N. B. S. copper wire, phantom the two coppers and use the phantom circuit for Summitville and the two metallic circuits for Alexandria. Can you furnish me with a satisfactory transposition system for this line? On my sketch. I have indicated the number of arms on the existing lead and their length. Number one to four pins will be used of the top arm. There are no close parallels of electric power on any of the route. However the Summitville company has several contacts on our lead.

A. This is a very clean cut plan for obtaining a phantom circuit between Fairmount and Summitville and two metallic side circuits (copper number 12 one old and one new) from Fairmount to Alexandria. While Alexandria is not shown on the sketch which accompanied the inquiry I am assuming that it lies beyond Summitville and that Summitville is an intermediate point between Fairmont and Alexandria. The conditions are perfect for a satisfactory phantom circuit. Two phantom repeating coils with associated individual protectors will be needed at both Fairmount and Summitville. The two copper circuits (one old and one new) will have to be very carefully balanced out so that the resistance of each **conductor** is equal to that of the others within close limits. According to the sketch the wire distance between Fairmount and Summitville is about 10.2 miles. It is likely that an elaborate transposition scheme will not be required in this case. However, since, the complete data required is not given, I suggest that you consult some description of transposition systems. When you have done this you can lay out your own transposition plan much more satisfactorily that you can supply all the data needed to thoroughly cover the conditions in this column. I suggest that you order a copy of the HANDBOOK FOR TELEPHONE MANAGERS and ENGINEERS, by B. C. Burden of which Volume I is now available and Volume II will soon be issued. This book will enable you to design your transposition for the very excellent arrangement that you propose and can be ordered from TELEPHONE ENGINEER. If I can be of any further assistance please send in all the pole line data and I will be glad to analyze the matter.

Free Help on Problems

IF YOU'D like Jay G. Mitchell's technical and helpful opinion on some question, a postcard will bring you a reply in these columns. Or if you're in a hurry, please send along a stamped self-addressed envelope for immediate reply.

Let TELEPHONE ENGINEER tackle your problems when you do not have the answer. This is a free service. Your question and the resulting answer may not only solve your problem but also help the many other telephone men reading these columns.

Q. Could you please put us in touch with the party who made the inquiry regarding the 5 pair Neoprene jacketed cable in the August 1, 1948 issue.

We have used some of this cable but it cost us more than the 1½c per foot, but we are mostly interested in how he does the splicing and terminating the drops. A stamped envelope is enclosed for your convenience.

A. The file department of TELEPHONE ENGINEER advises that it is practically impossible to identify this inquiry to which you refer. For that reason we cannot, at this time, furnish you with the name and address of the Telephone Company from which the question came. Possibly, the publication of your inquiry may bring in some new communications giving the information desired. If and when such are received I will gladly pass the information on to you.

If used for local distribution it would be feasible to install small unprotected terminals at the distribution points terminating the two cables, in and out of each terminal, and using pothead methods to seal the terminal.

Poles and Crossarms

You're sure of deliveries on schedule when you order poles and crossarms from Graybar.

We supply full-length, pressure-treated poles and Douglas fir crossarms. The high, rigid standards these materials have to meet are your assurance of outstanding strength, endurance, and uniformity — adding up to long service.

...and Pole-Line Supplies

The insulators, wire, strand, hardware, and tools that Graybar distributes are all made by leading manufacturers.

Whenever you order telephone supplies from Graybar, you not only get first-quality items — you get delivery from a near-by Graybar warehouse, saving valuable time in either emergency or regularly scheduled shipments.

You can confidently give your near-by Graybar Telephone Specialist the responsibility of meeting *all* your electrical supply needs — accurately, quickly, and economically.

Graybar Electric Company, Inc.
Executive offices: Graybar Building, New York 17, N. Y.

4911

Everything in Telephone Supplies Via GraybaR

IN OVER 100 PRINCIPAL CITIES

"Joint Use"

(*Continued from page 35*)

poles will lean, or what effect on telephone cable and drop installations.

(3) *Excess damage to poles by gaffing.* It was observed during the inspection of the electric pole line that there had been more damage by gaffing of the electric poles than is usual on telephone poles where steps are provided on terminal poles and very little necessity of climbing other poles is involved.

(4) *Tree clearing expense at telephone circuit level.* Some trees and brush that had not yet reached the height of interference with electric circuits would entail an immediate expense to the telephone company on the lower level. (While this is usual in case of a separate telephone pole line and is not a disadvantage to the telephone industry, yet it is a factor in any comparison of comparable advantage of joint use).

(5) *Expected changes in electric fixtures.* There was good reason to believe that the town will experience considerable growth and other observations indicated that the amount of work over the new telephone cable and drop plant, would be increased sharply over the amount of changes that had been necessary during the first several years of life of the electric plant. This would involve more than usual risk of damage and more items of expense changing the new telephone plant to accommodate the necessity for higher poles and other changes.

(6) *Problems of coordinating future construction and maintenance plans.* As indicated above, the electric pole line was placed wholly upon the basis of the electric utility's standards and requirements. Poles in many instances were placed at lot lines but it had not been necessary to line them up perfectly as cable pole line construction requires. (It is one thing for top management of two utilities to agree upon a contract providing for formal notice of intention to construct or change a line, but it is quite another thing for local management to carry this provision out in actual practice. Generally speaking, pressure for extension of service lines comes first to the electric company and there is not always time to consult the tele-

(*Please turn to page 59*)

THE WHITNEY BLAKE BULLETIN

DROP WIRE CONDUCTORS

In the early days of the telephone, no distinction was made as between line wires and drop wire, then known as "leading in" or "exterior wire". Bare wire was used for both purposes. Diameters varied from 0.064 to 0.165 inch. It was soon found desirable, however, to use insulated conductors for the purpose and "14 twist" was introduced in about 1900. By that time the term "drop" had been adopted probably due to the fact that stations were connected from open wire distribution mounted on poles on the tops of buildings with wires leading down from this distributing system.

The drop wire used in those early days was largely hard drawn copper but iron wire, too, was employed extensively. Considerable quantities of iron drop wire were used even as recently as 1940. Before 1920, No. 17 AWG bronze was replacing No. 14 AWG hard copper to a considerable extent. Copper-clad steel, too, later known as Copperweld, was used in large quantities.

For aerial distribution purposes in telephone systems today the principal conductors employed are No. 17 and No. 18 signal or cadmium bronze and No. 20, No. 18 and No. 17 Copperweld.

The composition and characteristics of these alloys and conductors made from them are given in Table 1. Copper is included in the table for purposes of reference.

TABLE 1

Composition and Characteristics of Alloys Commonly Used for Drop Wire

	Signal Bronze	Cadmium Bronze	30% H.S. Copperweld	Hard Copper
Composition, Per cent				
Copper	98.25	99.00	—	100.00
Tin	1.75	—	—	—
Cadmium	—	1.00	—	—
Zinc	—	—	—	—
Phosphorous	—	—	—	—
Tensile Strength—Lbs./sq. inch				
Hard	113,500	90,000	125,000	65,000
Elongation, Per cent				
Hard	1.0	1.0	1.0	1.0
Ave. Coeff. Linear Exp. /°F.	9.9×10^{-6}	9.8×10^{-6}	—	17×10^{-6}
Resistance— Ohms/1000 ft. 68°F.				
#18 AWG	17.7	7.5	21.4	6.385
#17 AWG	14.0	5.9	16.7	5.064
Conductivity, Per cent	36	85	30.0	100.00
Breaking Strength—Lbs. (Single)				
#18 AWG	135	105	170	86
#17 AWG	170	145	200	108

No. 17 Signal Bronze is now used for the most part in the independent telephone industry. It is resistant to corrosion, has high strength, good conductivity and has proved to be very satisfactory for the purpose required. The breaking strength of 170 pounds per conductor has been considered a standard in areas which are subject to wind and ice loads. No. 17 Cadmium Bronze, too, is used to a considerable extent in areas of light wind and ice loading. It is higher in conductivity but lower in strength than Signal Bronze.

Copperweld has the advantage of extremely high strength. Its use in the past has been limited because of its corrosion characteristics and because of its low salvage value. With the development of drop wire which has greatly extended life, — as pioneered in Whitney Blake Teleprene, — the salvage loss assumes minor importance and the possibility of conductor corrosion is minimized. In most of South America, where wind and ice load are unknown, No. 20 Copperweld is used extensively.

Another high strength alloy containing about 10% zinc is now enjoying some use but up to this time experience with it is very limited.

Where heavier conductors are required such as for toll bridling or in drops where transmission requirements are exceptional, No. 16 and No. 14 hard drawn copper conductor is used.

Whitney Blake Teleprene drop wire and weatherproofed drop wire are supplied with No. 17 or No. 18 Signal Bronze, No. 17 Cadmium Bronze and No. 17, No. 18 or No. 20 Copperweld conductors as well as No. 14 and No. 16 hard copper. Whitney Blake bridle wires are manufactured with No. 18 soft copper and No. 20 hard copper.

Reprints of this advertisement are available on request.

THE WHITNEY BLAKE CO., BOX K, HAMDEN, CONN.

A HANDBOOK for Telephone Men

INDEX: Open Wire Construction **DATE: February 15, 1949**

*TABLE 3—Stringing Sags For HTL 85 Telephone Wire (No. 12 B.W.G.)

Heavy Loading Districts—Long Spans from 125 to 225 Feet

Span Length (Feet)	Temperatures in Degrees Fahrenheit											
	100°	90°	80°	70°	60°	50°	40°	30°	20°	10°	0°	-10°
	— Sag in Inches —											
125	13.0	12.0	11.0	10.0	9.5	8.5	7.5	7.0	6.5	6.0	5.5	5.0
130	14.0	13.0	12.0	11.0	10.0	9.0	8.0	7.5	7.0	6.5	6.0	5.5
140	16.0	15.0	14.0	12.5	11.5	10.5	9.5	9.0	8.0	7.5	7.0	6.5
150	18.5	17.0	16.0	14.5	13.0	12.0	11.0	10.0	9.0	8.5	7.5	7.0
160	21.0	19.5	18.0	16.0	15.0	14.0	12.5	11.5	10.5	9.5	9.0	8.0
170	23.5	22.0	20.5	18.5	17.0	15.5	14.0	13.0	12.0	11.0	10.0	9.5
180	26.5	24.5	23.0	20.5	19.0	17.5	15.5	14.5	13.0	12.0	11.0	10.5
190	29.5	27.0	25.5	23.0	21.0	19.5	17.0	16.0	14.5	13.5	12.0	11.5
200	33.0	30.0	28.5	25.5	23.5	21.5	19.0	18.0	16.0	15.0	13.5	13.0
210	36.0	33.0	31.5	28.0	26.0	23.5	21.0	19.5	17.5	16.5	15.0	14.5
220	39.5	36.5	34.0	30.5	28.5	26.0	23.5	21.5	19.5	18.0	16.5	15.5
225	41.5	38.0	35.5	32.5	30.0	27.0	25.0	23.0	21.0	19.0	17.5	16.5

These sags are such that the unloaded tensions at minus 10 degrees fahrenheit equal approximately one-fifth of the rated breaking strength of HTL 85 wire, for all span lengths shown above.

Medium Loading Districts—Long Spans from 200 to 325 Feet

Span Length (Feet)	Temperatures in Degrees Fahrenheit											
	100°	90°	80°	70°	60°	50°	40°	30°	20°	10°	0°	-10°
	— Sag in Inches —											
200	25.0	23.5	22.0	20.5	19.0	17.5	16.5	15.0	14.0	13.0	12.0	11.5
210	27.5	26.0	24.0	22.5	21.0	19.5	18.0	16.5	15.5	14.5	13.5	13.0
220	30.0	28.5	26.5	25.0	23.0	21.5	20.0	18.5	17.0	16.0	15.0	14.0
230	33.0	31.0	29.0	27.0	25.0	23.5	21.5	20.0	18.5	17.5	16.0	15.0
240	36.0	33.5	31.5	29.5	27.0	25.5	23.5	21.5	20.5	19.0	17.5	16.5
250	39.0	36.5	34.0	32.0	29.5	27.5	25.5	23.5	22.0	20.5	19.0	18.0
260	42.0	39.5	37.0	34.5	32.0	29.5	27.5	25.5	24.0	22.0	20.5	19.5
270	45.5	42.5	39.5	37.5	34.5	32.0	30.0	27.5	25.5	24.0	22.0	21.0
280	49.0	45.5	42.5	40.0	37.0	34.5	32.0	29.5	27.5	25.5	24.0	22.5
290	52.5	49.0	46.0	43.0	39.5	37.0	34.5	32.0	29.5	27.5	25.5	24.0
300	56.0	52.5	49.0	46.0	42.5	39.5	36.5	33.5	32.0	29.5	27.5	26.0
310	60.0	56.0	52.5	49.5	45.5	42.5	39.0	36.0	34.0	31.5	29.0	27.5
320	64.0	60.0	56.0	52.5	49.5	45.0	42.0	38.5	36.0	33.5	31.0	29.5
325	66.0	62.0	58.0	54.5	51.5	47.5	44.0	40.5	37.0	34.5	32.0	30.5

These sags are such that the unloaded tensions at minus 10 degrees fahrenheit equal approximately one-fifth of the rated breaking strength of HTL 85 wire, for all span lengths shown above.

Light Loading Districts—Long Spans from 275 to 375 Feet

Span Length (Feet)	Temperatures in Degrees Fahrenheit											
	100°	90°	80°	70°	60°	50°	40°	30°	20°	10°	0°	-10°
	— Sag in Inches —											
275	40.0	37.5	35.0	32.0	30.5	28.0	26.0	24.0	22.5	21.0	19.5	18.5
280	41.5	39.0	36.5	33.5	31.5	29.0	27.0	25.0	23.5	22.0	20.5	19.0
290	44.5	41.5	39.0	36.5	34.0	31.5	29.0	27.0	25.0	23.5	22.0	20.5
300	47.5	44.5	41.5	38.5	36.0	33.5	31.0	29.0	27.0	25.0	23.5	22.0
310	51.0	47.5	44.5	41.5	38.5	36.0	33.0	31.0	28.5	26.5	25.0	23.5
320	54.0	50.5	47.5	44.5	41.5	38.5	35.5	33.0	30.5	28.5	26.5	25.0
330	57.5	54.0	50.5	47.0	44.0	41.0	37.5	35.0	32.5	30.5	28.5	26.5
340	61.0	57.5	53.5	50.0	46.5	43.5	40.0	37.0	34.5	32.0	30.0	28.0
350	64.5	60.5	56.5	53.0	49.0	46.0	42.5	39.5	36.5	34.0	32.0	30.0
360	68.5	64.0	60.0	56.0	52.0	48.5	45.0	42.0	39.0	36.5	34.0	32.0
370	72.0	67.5	63.5	59.0	55.0	51.0	47.5	44.5	41.0	38.5	36.0	33.5
375	74.0	69.5	65.0	60.5	56.5	52.5	48.5	45.5	42.0	39.0	36.5	34.0

These sags are such that the unloaded tensions at minus 10 degrees fahrenheit equal approximately one-fourth of the rated breaking strength of HTL 85 wire, for all span lengths shown above.

*Copyright 1945 by Indiana Steel and Wire Company.

"Joint Use"

(Continued from page 56)

phone company. Then, since joint-use agreements do not generally mention or define the minimum span requirements, and other special requirements for telephone construction, the construction which is done by the electric company may not especially consider telephone requirements, and while span lengths are not so long in urban electric plants, there have been cases of damage to telephone plant due to unusual sag with heavy loading on long span construction in rural areas).

(7) *Division of the capital savings on a* 50-50 *agreement.* In the case referred to above, negotiations were looking forward to purchase of a half interest in the existing electric pole plant that could be adapted to joint use and that company's table of pole prices for new and depreciated poles and for moving and changing poles (not today's prices) was submitted.

The electric company's poles, although of insufficient height, were of stout class, but assuming that they had been 35′ Class 5, rather than 30's of that class or better, the telephone company could have purchased a half interest in them upon the basis of $23.50 (new cost).

According to the same table, the telephone company's own 25′ Class 7 poles could be placed for $25.00.

This would indicate a capital savings of $1.50 per pole or a rather unhandsome "reward" of 6% through joint use, over and above the cost of placing a standard telephone pole. Upon the other hand, the electric company's reduction in capital outlay would have been reduced by an extremely impressive 50%, to say nothing of the apparent preponderance of operating advantages which would have accrued to the electric utility by having the telephone plant underneath on the same pole line.

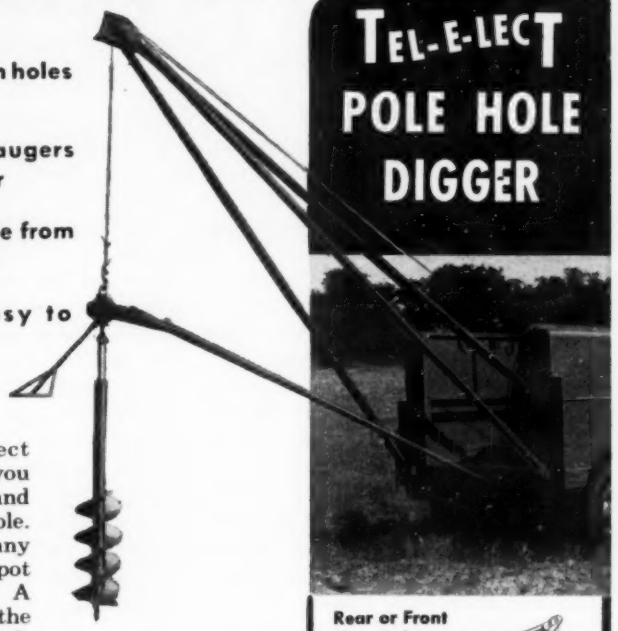
"Balancing Ownership"

The very existence of private enterprise in small community telephone plants is seriously threatened today, and as individual electric utilities begin to feel the pinch of higher operating costs, the pressure upon telephone companies for higher pole rentals or balancing of ownership of jointly used poles on a

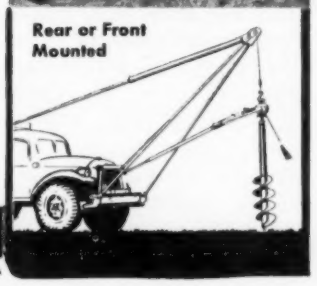
Operates ON ANY DERRICK TRUCK

TEL-E-LECT POLE HOLE DIGGER

- Adjustable for clean holes to 8 ft. deep
- Interchangeable augers 9" to 16" diameter
- Drills a straight hole from any truck position
- Easy to use—easy to transport



WITH the Tel-E-Lect Pole Hole Digger, you use the same truck and crew that sets the pole. You can drill a hole any place that you can spot the pole derrick. A single bolt attaches the digger to the truck; it works suspended from the derrick. Powered by the truck motor through a power take-off shaft, Tel-E-Lect is raised and lowered by the winch line. Fits the budget of even the smallest utility, and quickly pays for itself. *Ask for circular.*



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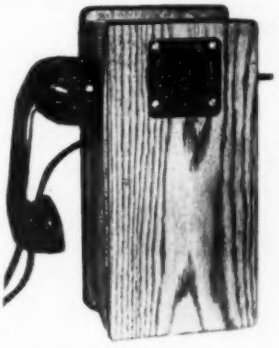
9613 MINNETONKA BOULEVARD, MINNEAPOLIS 16, MINNESOTA

A Great Team!

provide unsurpassed service for all rural magneto lines



BANTAM for the wall

BANTAM 1600 ohm $28.00
2500 ohm 28.50

★

Black enameled metal battery box, 2 cell ..... $.90

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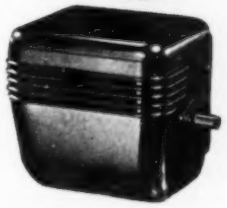

LEICH for the desk

LEICH 70C Desk Handset 26A Generator Box
1600 ohm $31.00
2500 ohm 31.25

Brand New — Stock Shipment — F. O. B. Chicago

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TELEPHONE REPAIR & SUPPLY COMPANY

DAN'L H. McNULTY, President and Manager

1760 Lunt Avenue — Chicago 26, Illinois

50-50 basis will doubtless increase to the point of a much more serious problem.

Presumably, the electric companies that have traditionally enjoyed the protection of guarantee deposits in new subdivision layouts will continue to enjoy this protection, even when the telephone company sets the poles in order to "balance ownership". Presumably, the electric company will also continue to receive immediate revenue by hook-up service to provide electricity for power tools used in building construction, and 100% patronage after the new owners move in. There is every reason to believe that the reverse tradition will continue in future telephone operations.

In the meantime, many, many telephone men are thinking in terms of $.25 or less per pole per annum rental for Classes "B", "C", and "D" telephone companies' contacts on electric poles, and for Class "A" companies' ownership and maintenance of from one-fourth to one-third rather than one-half of the jointly used poles. While few telephone men would insist that the greater superiority of advantages which the electric company enjoys by having the telephone circuits directly under them on the same pole line would justify free contacts for telephone circuits, yet one can point out numerous plants where the $1.00 or $2.00 or more per pole contact revenue the electric company receives is utter "gravy".

In this connection, the writer has another city in mind where the electric poles ranged from Class 3 to Class 9, and while these poles were of the 35′ height required to clear the legal telephone circuit clearance level, they were placed exactly according to the electric company's own needs. A large majority of them were placed at a time when costs were perhaps less than half of present day costs of pole line construction. There is no record of overbuilding of telephone lines or replacing telephone poles with electric poles in this town without permission as has been the case in some plants. There are, however a number of cases of perpetual free telephone contact rights being granted in lieu of most valuable permission being granted to set electric poles in the telephone right-of-way and the telephone company's willingness to rearrange their own pole line to suit the long span construction. In such cases the extension of the electric lines would have been otherwise virtually impossible or would have at least required very large costs of clearing right-of-way.

No single instance has been noted where the telephone problem was improved by granting these valuable privileges. There have been cases of noise interference on open wire circuits which were difficult to locate; there have been cases where the unanticipated necessity of placing secondary electric circuits afterward was not desirable upon the part of the telephone service; and there have been cases of where telephone wires and cables were burned in two by contact during heavy ice and windstorms.

In this case, the telephone town plant has an extensive underground cable with no aerial cable plant larger than 100 pair and practically no multiple-arm leads. It becomes obvious that although it was highly convenient to contact the electric company poles with a drop for what was in too many cases a purely temporary or emergency telephone installation, it does not logically suggest that the telephone company should pay a contact rental equal to or exceeding the original carrying charge of the electric pole, or to set enough poles at today's prices to balance ownership of all but the "permanent-free-contact" poles "jointly used" with the electric company.

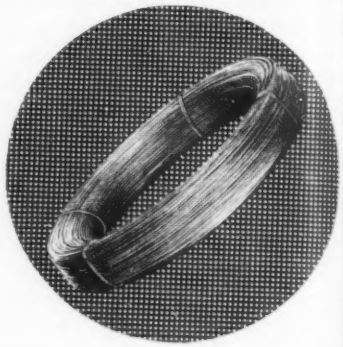
Isn't there, therefore, considerable to recommend a fresh examination and appraisal of the whole question of joint use of poles? If the past concepts of what was equitable and fair have not resulted in the maximum possible amount of elimination of duplicate plant investment, carrying charge, and use of public and private space for poles, a more modern study and approach to the problem should bring up a formula that would induce more joint use. If the 50-50 basis of sharing the burden is found to be inequitable, as many telephone men think, this should be corrected.

For actual financial history will show that telephone exchange patronage and revenues never have been as stable as has the electric patronage and revenues, nor as sufficient to cover requirements for furnishing good plant and service. Did you ever hear of very many people who voluntarily discontinued electric service? Upon the other hand, telephone men know of numerous instances where the convenience of contacting electric poles provided the only means of providing emergency or temporary installation

(Please turn to page 62)

STROMBE

crapo high-tensil
line wire
Reduces Over-all Cost

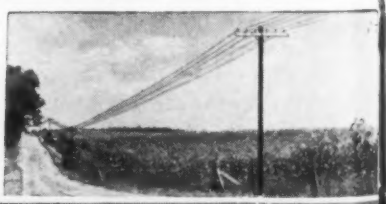


A net saving of 10 to 15 or more pole stru
tures per mile is possible where *Crap*
High-Tensile Telephone Line Wire is use
in long-span construction. Fewer po
structures mean substantial savings in tim
labor and material, and in maintenanc

Crapo HTL-135 makes possible spans
350 feet in heavy, 450 feet in medium, an
500 feet in light loading areas. Its practic
economy should be considered for ne
extensions and where old lines are to
replaced.

Crapo HTL-85 (No. 12 B. W. G.) permi
spans of 225 feet in heavy, 325 feet in m
dium, and 375 feet in light loading district
provides stronger spans on existing po
structures. Both wires possess superi
telephonic transmission qualities.

Write for Manual of Engineering Data an
Construction Practices for *Crapo* Hig
Tensile Telephone Line Wire!



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TELEPHONES, SWITCHBOARDS • SO IPMENT

BERG-CARLSON recommends...

the new Cook testerm *drop wire connector . . .*

reduces the annoyance of high resistance connections, facilitates testing, and reduces maintenance costs.

A great improvement in the method of connecting subscriber drops to open wire. "Testerm" is mounted on the cross-arm and provides a dry spot connection, thus insuring improved transmission.

Tie wires are attached to the open line wires with a split sleeve and are terminated on two 12-24 studs that are set in a glazed, low moisture absorption, porcelain block.

Drop wires are attached to the same studs. This permits testing without opening a taped connector.

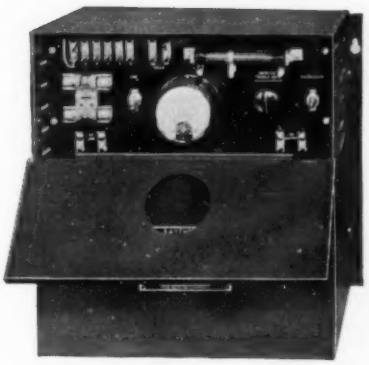
The one-piece drawn metal hood is Monel. The terminal is weather-proof and all metal parts are rust-proofed.

. . . dependable battery charging with the raytheon recticharger!

A small storage battery floated across the terminals of a Raytheon Recticharger provides closely stabilized DC voltage . . . longer battery life . . . and improved operation of manual or automatic telephone systems.

These are *proven* advantages that stem from exclusive design and long service to the telephone industry.

When replacing, expanding, or modernizing switchboard equipment, utilize Raytheon's extensive field experience and complete line. Available from 1.0 to 24.0 amperes with either 24 or 48 volt output.



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Hemingray No. 42. Standard for many years. Its long leakage path keeps toll lines trouble-free.

Hemingray Insulators have served the telephone and telegraph industry for more than three-quarters of a century.

Proof against every kind of weather and every temperature change, Hemingrays have won universal confidence.

That's why leading telephone and telegraph companies have adopted Hemingrays as *standard equipment.*

These famous insulators are manufactured by the American Structural Products Company, subsidiary of Owens-Illinois Glass Co.

RCARLSON

Factory, General Offices: Rochester 3, N.Y.
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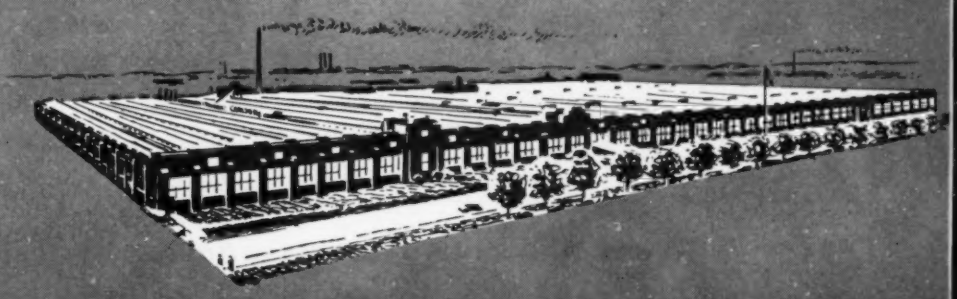

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which saved lives and has done much good even though the telephone company never realized a return of any considerable portion of their outlay for such temporary installations and service.

Certainly there is nothing in either past or present day comparative earnings' record to indicate that the telephone utility should continue a joint-use practice, which shifts an unjust portion of the costs of joint-use of the streets, alleys, highways and private right-of-way required to render these vital public services.

It is realized that many conferences and much energy and expense must have been involved in setting up the 50-50 joint use formula, and that it may have been considered that since it was impossible to strike upon a different than 50-50 division of ownership which would cover all joint plant situations, there would be no material difference in the long run since the actual costs experienced by each utility would be reflected in its own rates. But Independent telephone operating men, at least, have found out that it simply does not work out that way in actual practice, and they subscribe 100% to the statement that the "mule" is naturally much more able to "pull" the lion's share of joint-use costs than is the "dog".

(1) *Electric service is metered* and not a single kilowatt of advantage can be achieved by placing an extension cord across the way to a neighbor's or a relative's place. This has provided a more independent position than the telephone companies ever dreamed of achieving. Result is that electric utilities traditionally have enjoyed the following virtually exclusive protective provisions,—exclusive so far as telephone operating traditions are concerned:

(a) The customer wired his own place and the electric company's investment was limited to the drop and the meter.

(b) A meter deposit insured against excessive collection losses.

(c) Individual pole line extensions or extensions to new subdivisions have not only been upon the basis of reasonable assurance that customers who lived there would have to have electric service, wire their houses, make the meter deposit and pay their bills as required, but such extensions as would not prove in initially were subject to deposits to reduce the investment.

(2) *The law of diminishing returns* has imposed conditions upon the telephone industry, particularly upon the local exchange property investment, which has virtually dictated that while one could "turn the mule out" and he would become "sleek and fat", the "dog" would become "leaner and leaner" upon a fixed "ration", or rate. In actual practice, this law has worked in such manner that the electric industry has been able to make many rate reductions as the revenues from a single pair of wires multiplied without greatly increasing plant investment or personnel for production.

We all know that just exactly the opposite is true on the "dog" side of the utility business, where labor is required for each and every item of service usage (has now risen to 6/10 of a cent per local call or more) and where each subscriber or small number of subscribers must have a single pair of wires extending from the central office, where per station plant investments crawled, for instance, from $75.00 to $200.00 or more, and operators monthly wages for local calls from $.25 per station to $1.50 per station or more, while total monthly revenues per station were increasing at snail like paces.

As every telephone man knows, the telephone industry has tremendous problems today arising from the very fact that the modern pace of every day life demands telephone service (or seems to if one listens to the applicants' stories) for practically twice the number of people who could be induced to subscribe for it before the war. We are asked to make violent changes and additions in plant at the highest costs history has ever known.

This means a much higher rate and gross revenue than the traditionally low ones which have existed during the many years when telephone exchange rates were held to a bare minimum of necessity, because many non-subscribers literally could and did tap a telephone line without cost to get the amount of service considered necessary.

This situation would seem to make it necessary that no altruistic gestures be made upon the part of the telephone industry to assume any financial burdens that are not logical and absolutely necessary. The collection of taxes for local, state and federal governments would fall in this category, as would further assumption of an inequitable portion of the costs of joint use of the streets, alleys, highways and other space required for telephone plant.

For Telephone Engineer Publications By George Ludway

Motor Vehicle Safety Program

(Continued from page 39)

signed primarily to create and maintain the interest and correct attitude of drivers. These are:

(1) The companies have found "Safe Driver Award Plans" to be of value in stimulating and maintaining drivers' interest in safety. They vary somewhat in kind and method of presentation. A usual procedure is to present at suitable annual meetings card certificates showing the number of years the employee has operated a car without an accident. Sometimes it has been found possible to have the State Commissioner of Motor Vehicles or some other state or city official present upon such an occasion. Photographs of these meetings and further recognition to the outstanding drivers often appear in the company magazines and safety publications.

(2) In addition to cards, special recognition is given to drivers who have operated their vehicle ten years (about 100,000 miles) without an accident. The awards are presented by officials of the company at annual meetings attended by the drivers or even all the employees in a district. Upon the completion of fifteen or twenty years' safe driving, employees may be given further recognition.

(3) In Safety Contests activity the accident summaries are used to engender friendly competition and rivalry between districts and Areas. Suitable plaques and awards are presented to the winners.

(4) Employees in some companies are given opportunity to sign cards containing a resolution to drive safely both on and off the job during the coming year. The cards are kept by the employees and serve as a reminder of the safe driving precautions to be observed.

(5) Steering Wheel Cards, about the size of an ordinary post card, contain brief printed instructions or reminders and are placed on the steering wheels of vehicles. New cards with different wording are used each week for perhaps 25 consecutive weeks. These have a definite educational value as well.

(6) Experience has shown that persons trained in first aid understand better the seriousness of injuries and will do more to keep from becoming involved in accidents.

It should not be assumed that all these activities are under way at the same time in all Bell System companies. It is recognized that any employee stimulation which becomes monotonous loses its appeal. For this reason certain projects may be discontinued and others introduced in the effort at all times to do things which seem to be most successful in developing smooth, courteous, efficient drivers, always mindful of the rights of pedestrians and their motorists.

Motor Vehicle Accident Data And Their Use

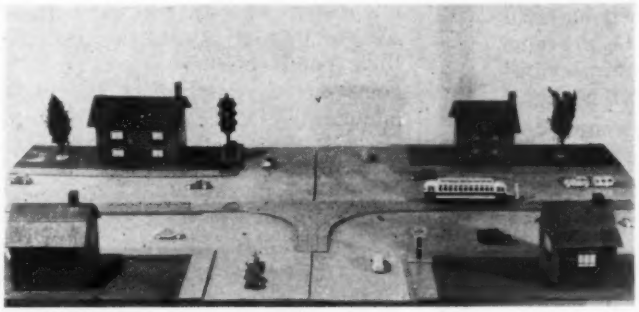
All kinds of records are needed in the Bell System for efficient operation. In order to determine the effectiveness of the motor vehicle safety activities, accident reports are carefully recorded and summarized. The summaries are compared with the results for other periods, and any trends which are developing are noted. Thus information is provided for the purpose of showing where special attention might most profitably be applied.

This information—the facts behind the accidents—may indicate a need for change in design of equipment; change in practices; or the introduction of special training to correct unsafe acts or driving habits —speeding, following too closely, lack of concentration.

Accident reports and records are not an end in themselves. They are valuable if used to determine the progress being made, conditions and driving practices which cause accidents, remedial measure to be introduced to correct adverse trends: in general, the basis for a sound motor vehicle accident prevention program.

It is essential that drivers appreciate the need for traffic laws as necessary to both the movement of traffic and the prevention of accidents. Bell System drivers do understand this; and, furthermore, they know that drivers who disregard the rights of others must be restrained from doing so, and in extreme cases denied the privilege of driving if they persist in the practice. This makes for an appreciation of the need for efficient law enforcement and for measures which are aimed at saving life and property through the prevention of accidents to other motorists and pedestrians.

To help this realization, the telephone companies furnish their employees an illustrated booklet containing the city and state driving regulations, operating practices, or rules for safe driving and procedures to follow in reporting accidents if they occur. Operating prac-



How accidents happen, and how they can be avoided, are shown on demonstration boards with miniature vehicles.

Vehicles on the board at the right are maneuvered by means of electrical controls.

LIGHT
CAN'T HURT
TELECORD

The tough tire-tread type neoprene jacket protects the sulphur-free rubber insulation from deterioration caused by light. This is one of many reasons why TELECORD has been adopted by so many Independent Telephone Companies as standard equipment.

Light causes insulation to crack and check, permitting moisture, tarnish and other influences to do their harmful work. TELECORD prevents all this by being impervious to and impenetrable by light.

TELECORDS last longer, cost no more than old fashioned troublesome cords—they look better, they are better.

Put these long-life tinsel-conductor TELECORDS on your telephones for service to your customers and economy for you. TELECORD for use as line or receiver cords is available from your Independent Telephone Manufacturer trimmed to fit all standard desk sets.

Koiled Kords
INCORPORATED
NEW HAVEN 14,
CONNECTICUT

BELL TELEPHONE
Hundred Thousand Mile Club
THIS CERTIFIES THAT
HAS COMPLETED TEN YEARS OF SAFE DRIVING AND IS HEREWITH MADE A MEMBER OF THE BELL TELEPHONE HUNDRED THOUSAND MILE CLUB
Membership No. Awarded
THE BELL TELEPHONE COMPANY OF PENNSYLVANIA
Safe Driving
CERTIFICATE
Expert Driver Award
Hundred Thousand Mile Club

Awards and certificates are presented to employees who have established outstanding records for safe driving.

tices covered in the booklets are exemplified by the following:

Traffic signs and lights
Traffic lanes
Intersections
Following too close
Weather conditions
Fog, snow, sleet and rain
Pedestrians—children
Parking
Inattention
Taking chances
Right and left turns
Passing
Use of horn
Hand signals
Speeding
School buses and trolleys

These efforts have resulted in splendid cooperation between Bell System drivers and city and highway police. Evidence of this is the attendance of city and state police officers at safety award meetings and their commendations given for the courteous operation of telephone company cars. Bell System employees are often called upon, in turn, to give police organizations the benefit of Bell System first aid training and safety experience, and often receive favorable publicity in the newspapers for safe driving.

Modern Maintenance Methods Promote Safety

In no other field of accident prevention is it so evident that the inefficiencies which cause accidents are the same as those which lead to other production losses.

Experience has definitely proven that safety and efficiency go hand in hand. This seems particularly true in providing adequately maintained motor vehicle equipment that is safe for employees to operate on the streets, roads, and highways, through all kinds of traffic and varying weather conditions.

Preventive maintenance assures that vehicles will be able to get safely to their destinations and not

Plowing-in telephone cable presents potential hazards which call for careful planning of the project and equally careful training in the necessary precautions.

CALCULAGRAPH CALCULATES IT

...FASTER!
...ACCURATELY!
...AUTOMATICALLY!
...EASIER!

It's sound business practice in any exchange—small or large—to rely on CALCULAGRAPH to compute and record elapsed toll time accurately to the second. Thus, all the revenue due is charged to every toll call and operators are relieved of detail work that slows switchboard service. Available in several models and adaptable to any installation from flush mounting to portable pedestal types. Every CALCULAGRAPH features low initial cost . . . dependable service year after year. Complete catalog data on request.

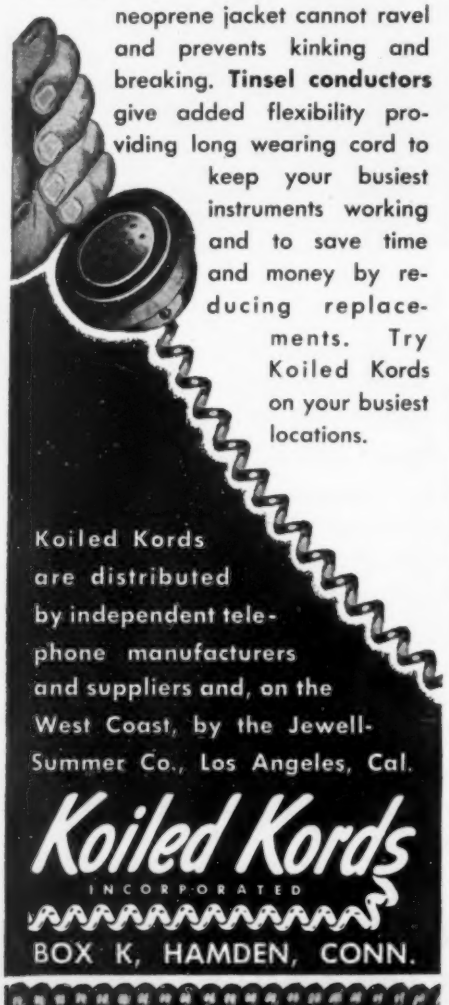
CALCULAGRAPH COMPANY
SUSSEX STREET • HARRISON • NEW JERSEY

KOILED KORDS
ON
Busy Instruments

SAVE

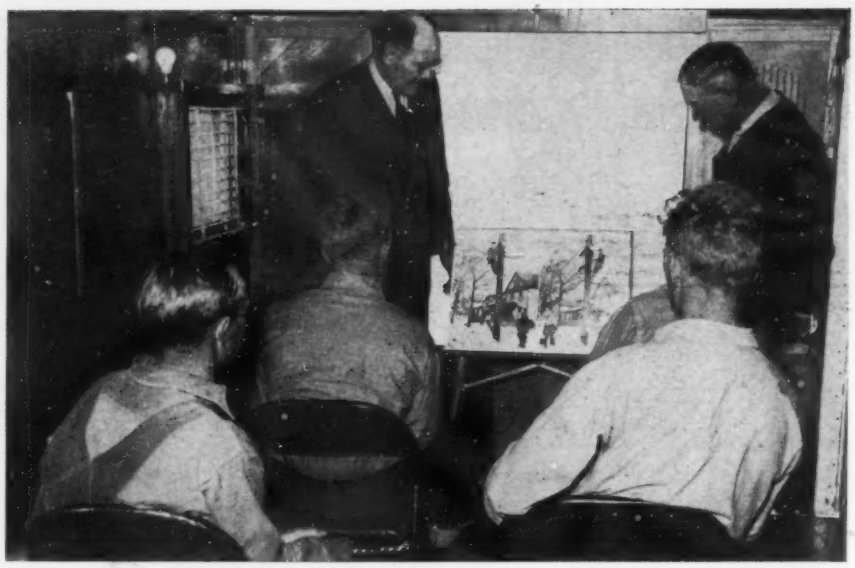
on replacements
and maintenance

On overworked telephones such as house phones in hotels; on information desks; on double desks in busy offices; in brokerage houses and other troublesome locations, Koiled Kords can save you money. The strong neoprene jacket cannot ravel and prevents kinking and breaking. **Tinsel conductors** give added flexibility providing long wearing cord to keep your busiest instruments working and to save time and money by reducing replacements. Try Koiled Kords on your busiest locations.



Koiled Kords
are distributed
by independent telephone manufacturers
and suppliers and, on the
West Coast, by the Jewell-
Summer Co., Los Angeles, Cal.

Koiled Kords
INCORPORATED
BOX K, HAMDEN, CONN.



A trailer equipped with motion-picture projector and screen and with other display items takes classroom safety training to men on the job in remote locations.

be held up for emergency repairs, reduces to a minimum the possibility of accidents caused by mechanical failures, and maintains the condition and appearance of the vehicles so that drivers will be proud of their vehicle.

Bell System companies have long recognized the value of properly maintained garages. A clean, orderly, good-looking garage, stock room, and storage yard reduce the possibility of accidents to the garage forces and to motor vehicle drivers while entering or leaving the garage or yard. A properly maintained garage can be an incentive for drivers to keep their cars, tools, and equipment in good condition and to drive and work safely during the day.

Drivers are trained to understand the fundamentals of mechanical construction and operation of their vehicle and equipment, and the value of preventive maintenance. The value of checking steering, brakes, horn, lights, tires, and windshield wipers before leaving the garage each morning and reporting each defect at the end of the day's work are included in the training. This is because almost all motor vehicle failure is progressive, and many of the troubles which lead to eventual breakdown can be discovered and reported by the driver. This is another way of preventing accidents before they happen.

Fitting Motor Vehicles for The Work to be Done

Motor vehicle equipment, like telephones and switchboards and all the other types of telephone plant, is constantly being improved to meet the particular needs of the service.

In this evolutionary process, one of the main features always given consideration by Bell System automotive engineers is to build safety into design and use of the equipment.

In addition to making equipment safe to use and the work less burdensome, it is designed with the comfort and convenience of the employees in mind. Examples include

This creed is standard equipment on the instrument panel of every Bell System motor vehicle.

the development of the crew compartment on trucks behind the regular three man cab, space for storage of lunch boxes, heaters (when necessary), and drinking water coolers.

In the use of motor vehicles and the many kinds of construction apparatus, employees are encouraged to observe and report upon operating practices and upon design features of the equipment which can be improved from the standpoint of safety or efficiency.

Improved and modern automotive equipment has done much over a period of years to make telephone work less burdensome as well as

What makes it worth having?

BY ITSELF, a Bell telephone is useless. What makes it so valuable to you is that it brings the world within easy speaking distance when connected to the Bell System network.

This network has billions of parts. *All had to be designed and manufactured to work together* for good telephone service.

To assure a dependable source of good equipment that *will work together* with all other parts of the nation-wide telephone network, Western Electric long ago was made the manufacturing unit of the Bell System.

● **As members of the Bell System, Western Electric people can work *most closely* with Bell research people who design equipment and Bell Telephone company people who operate it. Result: You get the most dependable, most valuable telephone service on earth.**

MANUFACTURER of telephone apparatus for the Bell System.

PURCHASER of supplies for Bell Telephone companies.

DISTRIBUTOR of Bell telephone apparatus and supplies.

INSTALLER of Bell System central office equipment.

Western Electric

A UNIT OF THE BELL SYSTEM SINCE 1882

RUNZEL CORDS

FOR Every TYPE INSTRUMENT

Finest workmanship in the trimming operation.

—

Highest grade materials.

—

Constant and varied inspections during the process of manufacture.

—

these features assure a consistent quality cord in every detail and are responsible for the clarity of reception for which RUNZEL CORDS are popularly known.

RUNZEL QUICK SERVICE

We carry large stocks of cords for all types of telephone service. Whether you need one cord —a dozen—or a quantity, you'll get prompt service on your order. Emergency requirements are given special attention.

You can RELY on RUNZEL

RUNZEL
Cord and Wire Co.
4723 W. MONTROSE AVE.
CHICAGO 41, ILL.

The mobile training unit reaches a construction crew out in the great open spaces.

safer. This is the natural result of placing special emphasis on all mechanical devices which will save time and promote efficiency. A few outstanding examples illustrate the modern method of utilizing automotive power equipment rather than hand power: digging holes with pole-hole diggers; handling, setting, and moving poles with power winches and derricks; using power reels for taking down wire and removing cable, and using pole and cable-reel trailers. The use of power winches for lifting heavy loads, pulling in and removing aerial and underground cable, and many other operations has lightened burdens and made telephone work easier, safer and more efficient.

Printed instructions covering the methods of using automotive equipment and construction apparatus include safety precautions. The cable splicer working with a truck equipped with a platform ladder would have a practice covering the raising and lowering of the ladder. This practice contains such statements as:

'Before erecting the ladder, be sure to learn and understand all the safety and general precautions involved."

". . . make sure that any signals are thoroughly understood by all persons concerned."

"Immediately after entering the platform, attach both safety chains to the D rings of your body belt."

In the final analysis, the success of the motor vehicle accident program rests in the hands of the 75,000 regular and occasional operators of the motor vehicle equipment. That is the reason safety programs are designed to utilize every possible educational method to develop in each driver an understanding of the approved techniques of skillful driving, as well as a feeling of his responsibilities to himself, his organization, the pedestrian, and other users of the highway.

That this approach has been successful is evidenced by the number of times that telephone company employees who operate motor vehicles have won high honors when they have competed with other fleets operating in the same city or locality.

Although the employees in the telephone companies are justly proud of their safety records, it is recognized that the problem is a never ending one. The general traffic conditions probably will not improve very rapidly as more vehicles fill the highways. With this there will be new drivers coming into the business, and new types and designs of motor vehicles and power equipment requiring special training and attention. Telephone service is essential in rain, sleet or sunshine. The fleet of well kept Bell System cars will be on the road in all kinds of weather.

While the purpose of organized safety is primarily to *prevent* suffering, heartaches, and financial losses to employees, their families, and others, a good record demonstrates that steps have also been taken to improve public relations, reduce costs, and otherwise increase the efficiency of operations.

It makes sense—because by doing things the safe way all are gainers. —*(Reprinted from the Bell Telephone Magazine.)*

A. E. Tomkin Co. Announces New Water Demineralizer

The Hydrion Water Demineralizer, manufactured by the A. E. Tomkin & Co., 1828 Columbia Road, N. W., Washington 9, D. C., provides a practical and simple means to convert ordinary tap water to a chemical purity of distilled water. By attachment to any water faucet, pure water can be always available, as needed, with the convenience of opening the tap.

The manufacturer states that no heat, or cooling, or power is involved. The Hydrion utilizes a disposable cartridge which when exhausted is merely replaced with a fresh cartridge.

The Hydrion is an ion-exchange water purifier developed for uses where low cost pure mineral-free water is required in relatively limited volume or at spot locations. The water can be delivered continuously or intermittently.

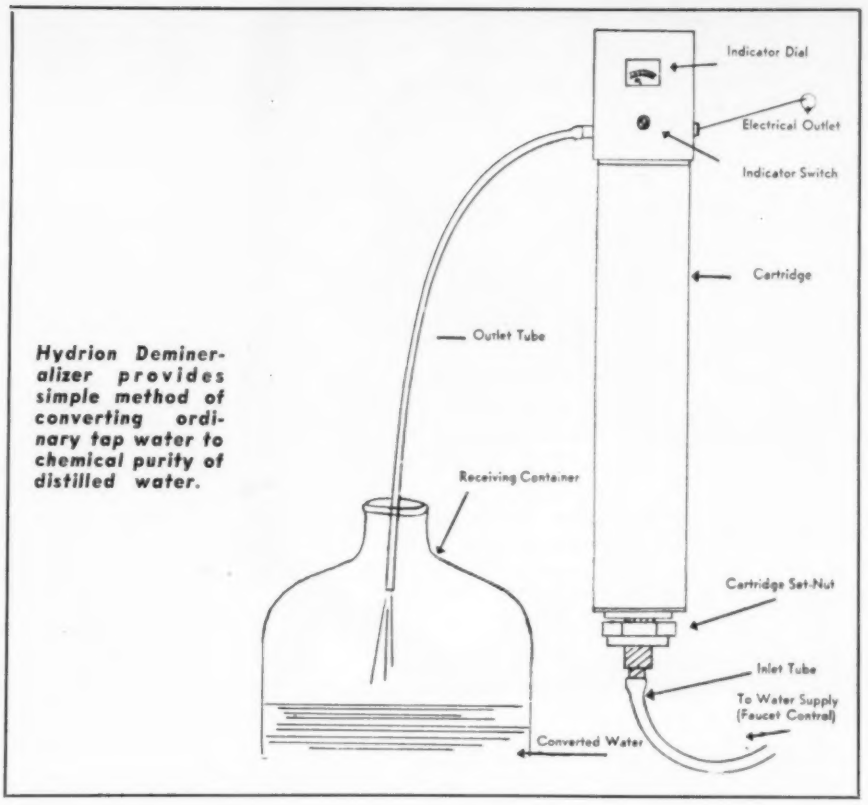
The unit consists of three principal parts: the replaceable cartridge; a wall-type cartridge holder; and an electronic indicator for quality of treated water. The Hydrion cartridge is the primary element of the unit. Any water passing through the cartridge is freed of its dissolved ionized impurities.

Cartridges are charged with two synthetic ion-exchange resins. A cation resin removes the metallic ions such as calcium, magnesium, iron, sodium; and replaces them with hydrogen ions converting the mineral salts into acids. The other resin called the anion removes the acids.

According to the manufacturer each cartridge has a capacity to remove more than 1100 grains of dissolved minerals, with the number of gallons of pure water delivered varying with the dissolved mineral content of the water of the locality. As examples: about 270 gallons of Baltimore water will be purified before cartridge is exhausted; about 130 gallons of Chicago water; about 130 gallons of New Orleans water; about 190 gallons of Sacramento water. The cartridge has no action on bacteria or organic substances.

The cartridge holder is made of cast aluminum having at its outlet end (top) the electronic indicator. The bottom end is provided with a cartridge securing device which by a turn-type arrangement sets the cartridge in operating position. The frame has two key-hole openings for wall mounting.

The electronic indicator has resistance electrodes in the outlet water line and an indicator meter to show the quality of the converted water at all times. The user by merely looking at the dial knows whether the delivered water is acceptable. The indicator dial signals when cartridge is exhausted and should be replaced. The limit for good water is calibrated for an end-point of an electrical resistance



Hydrion Demineralizer provides simple method of converting ordinary tap water to chemical purity of distilled water.

linemen PREFER

the "MIGHTY-MIDGET" Puller

Because it's Powerful but Small, Light Pulls 500 lb. (with big factor of safety), yet is easily carried on lineman's belt, weighs but 6½ lb. Compact enough to fit into a one-foot space.

Because it's Easy to Use, Fast The "Mighty-Midget" replaces heavy, complicated equipment. It is simple in design, simple to operate. Handle can be used either as a lever or a high-speed crank. Mere 28-lb pressure on handle pulls 500 lb.

Ask your distributor for more information on the "Mighty-Midget" or write for Bulletin UMP-1.

For Heavier Jobs—stretching heavy guys or cables, laying underground conduits, etc., use a "Safety-Pull" Ratchet Hoist. The ¾-ton model weighs but 14 lb.—eight other models, handling up to 15 tons.

COFFING HOIST COMPANY

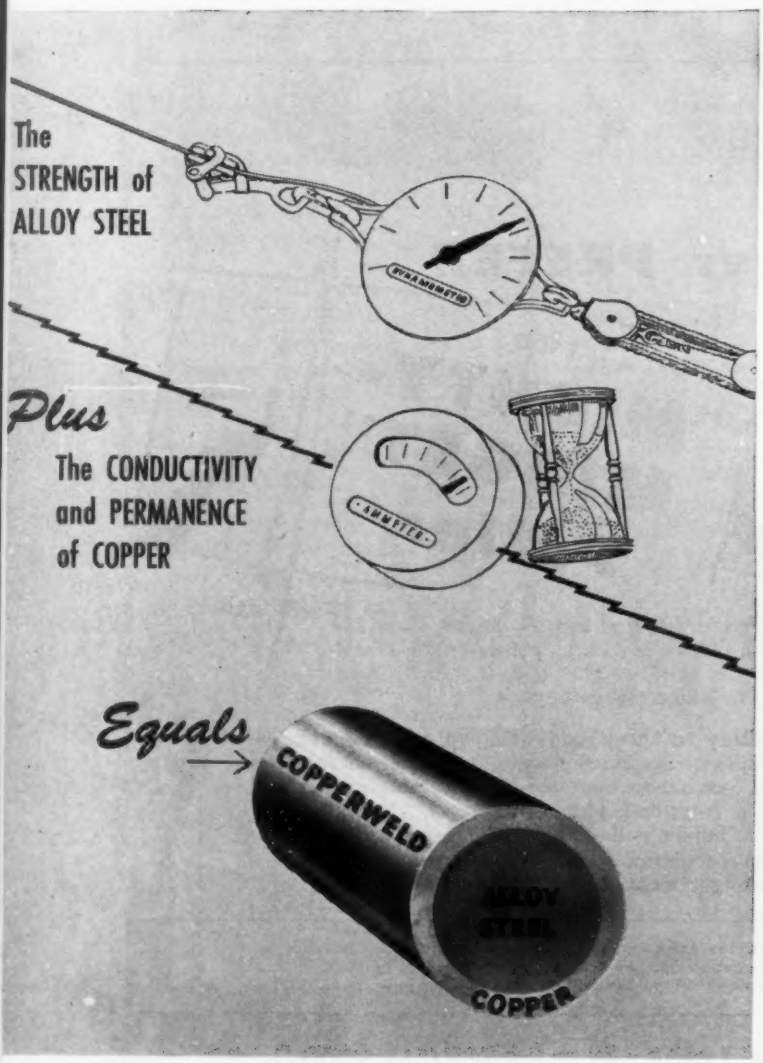
DANVILLE, ILLINOIS

Hoist-Jacks, Load Binders, Differential Chain Hoists, Electric Hoists, Spur Geared Chain Hoists, Trolleys, Special Utility Maintenance Tools

Successful INDEPENDENT TELEPHONE MAN Says:

GEORGE B. QUATMAN
Telephone Service Company of Ohio, Lima, Ohio

"The Kellogg Company has always given us excellent service; and on our requirements for government work during World War II, it was super!"



Non-rusting, Extra-strong Copperweld Line Wire is the only wire combining the strength of steel with the high conductivity and rust-resistance of copper. Its strong, alloy-steel core is covered by a thick, molten-welded copper covering. For long life and finer telephony, specify Copperweld, made by the COPPERWELD STEEL CO.

Drier Than the Driest Desert! Drierite Dessicant is the safer way to dry out splices in lead covered cables. After splicing, just place a cotton gauze under the splice and sprinkle Drierite granules among the conductors. This W. A. HAMMOND DRIERITE CO. product absorbs all moisture, thus making the splice the driest part of the entire cable.

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When you order from Kellogg, you fill out just ONE order form for *all* your line supplies. Saves you time and work! Then your order gets prompt attention by experienced telephone men. No chance for slip-ups here! Finally, we ship quickly, from the distribution point nearest you. It's fast, sure service, and every item is *guaranteed!*

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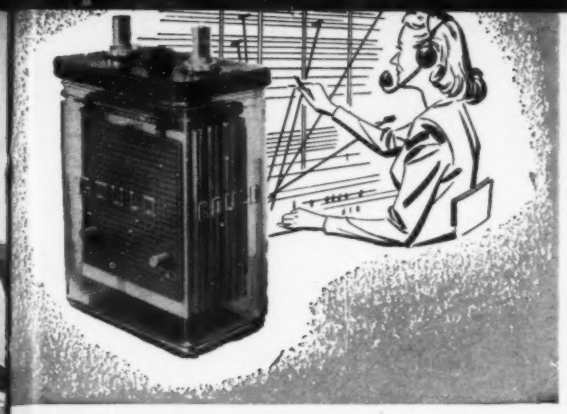
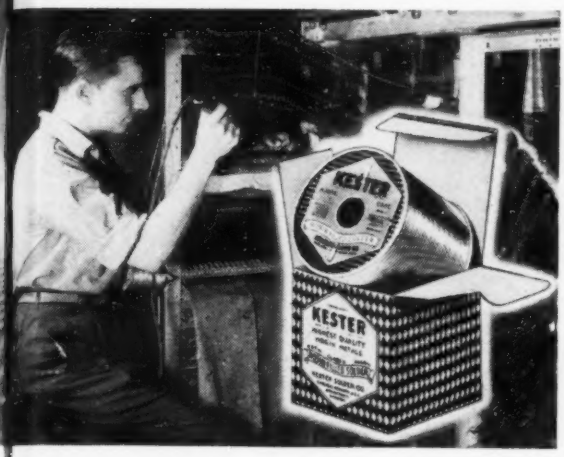
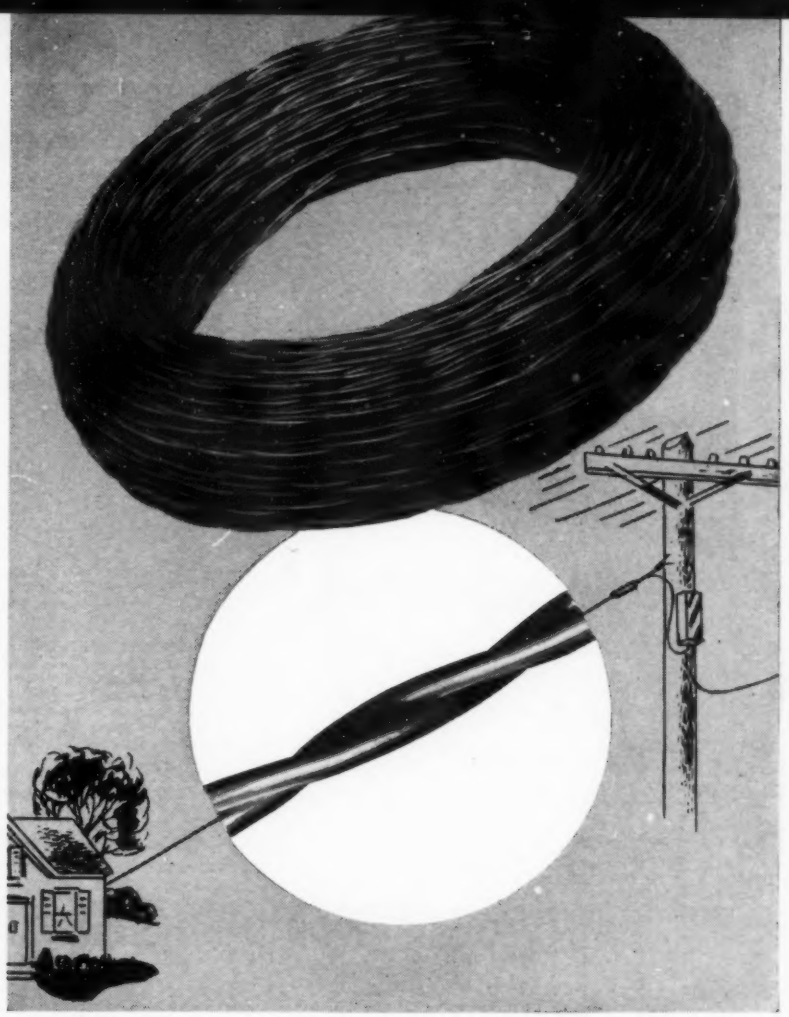
ALL OF THE ABOVE ITEMS MAY BE QUICKLY AND CONVENIENTLY ORDERED FR KE



…pendable Power is the cost-cutting benefit enjoyed by …ers of GOULD STORAGE BATTERY CORP. Plante …atteries. The ribbed, pure lead positive plates are covered …ith a dense film of active material. This retards per…idization even in full float service, insures longer life.



…ualed Against Trouble! Manufacturers of communication …quipment insist on Kester Plastic Rosin-core Solder, be…ause it makes a perfect seal. Prevents high-resistance …oints and open-and-closed circuits. Avoid trouble—use …ESTER SOLDER CO. solder throughout your system!



Drop Wire Lasts 30% Longer! GENERAL INSULATED WIRE WORKS Bronze Drop Wire lasts longer because it's drawn of solid, non-corrosive, high-conductivity bronze and covered with Neoprene—the tough insulation that stands hardest use. This wire is easier to handle, too, for it combines high tensile strength with great flexibility.

…table and Silent. The Sub-Cycle Ringing …nverter changes frequency without any mov… parts. As a result, wear and consequent …ustment and maintenance are virtually elim…ted. This LORAIN PRODUCTS CORP. …ic-type converter comes in several models.

Prompt Delivery: Available *now*, for use with modern cable spinners, is Crapo Galvanized Steel Lashing Wire. Heavily-galvanized; .091" dia., 325' coils. "Stainless Steel" Lashing Wire (.045" and 0.65" dia.) also shipped promptly. Products of INDIANA STEEL AND WIRE CO.

Tip-Top Shape! RectiChargeR automatic battery charging ends troubles caused by over- or under-charging. Keeps storage batteries in tip-top shape—fully charged always. Pro… longs battery life, reduces replacement costs. Made by the RAYTHEON MFG. CO.

New LIGHTWEIGHT ELECTRIC PLANT

5000 WATTS D.C.

Weighs only 315 lbs.!

Model 5CK-115M, 5,000 watts, 115 volts D.C.

Use fast-working electrical tools on any construction or maintenance job with this high capacity, portable, compact electric plant. Equipped with four-receptacle box for direct plug-in of tools or lights. Available with carrying frame, or dolly-mounted. Powered by Onan 10 HP, two-cylinder, 4-cycle, air-cooled engine. Shipped complete . . . ready to go!

NEW ONAN "CK" ELECTRIC PLANTS are available in 5000 watts D.C., 115 and 230 volts; 2000 and 3000 watts A.C. in all standard voltages.
COMPLETE ELECTRIC PLANT LINE INCLUDES: A.C.—350 to 35,000 watts in all standard voltages and frequencies. D.C.—600 to 15,000 watts, 115 and 230 volts. Battery Chargers—500 to 6,000 watts, 6, 12, 24, 32 and 115 volts.
ONAN AIR-COOLED ENGINES—CK: 2-cylinder opposed, 10 HP. BH: 2-cylinder opposed, 5½ HP. 1B: 1-cylinder, 3¼ HP.

Onan PRODUCTS

Write for catalog

D. W. ONAN & SONS INC.
5902 Royalston Ave., Minneapolis 5, Minn.

ONAN ELECTRIC PLANTS

TELL US YOUR *troubles*

Yes Sir!

We Are Looking for

TROUBLES

Especially those of Telephone Men

As usual the Spring Construction and Maintenance issue of TELEPHONE ENGINEER and MANAGEMENT, April 15, will be packed with discussions of Construction and Maintenance troubles. If you have or expect any problems along this line our editorial staff will welcome an opportunity to talk about them in this big issue.

of 50,000 ohms per c.c. This indicates a purity of approximately 10 parts per million of dissolved minerals. The bulk of the water produced is even of higher purity.

Copy of a new, enlarged bulletin describing the Hydrion Demineralizer may be obtained direct from the manufacturer or from Free Literature Department, Telephone Engineer Publications, 7720 N. Sheridan Rd., Chicago 26, Ill.

Federal Tel. Announces New Selling Plan

A new three-point selling plan, based on Federal's conception of a supplier's responsibility to the Independent telephone industry and designed to greatly simplify urgent supply problems of large and small operating companies, has been announced by L. J. Denney, director, Telephone Division, Federal Telephone & Radio Corporation, American manufacturing associate of IT&T.

According to Federal the new selling plan, comprises three points: (1) Substantial Price Reductions, made possible by important engineering and production economies and low cost factory-to-customer selling; (2) a new method of purchase, offering equipment on a 60 days' trial basis, if desired, and (3) quick deliveries—in most cases from factory shelf. An important feature of the plan is the fact that all equipment made available under its terms will be offered at published prices.

"In this era of high prices, shortages of equipment, and unprecedented subscriber demand, we are confident," Mr. Denney stated, "that Federal's new selling plan—representing our conception of a supplier's responsibility to Independent operating companies—will go far toward the relief of price and procurement problems. We believe that our program for dealing with the present supply situation is one of the most interesting and effective answers available to the industry today."

The first item of equipment offered to the industry under Federal's new selling plan is its 6E PABX, reduced in price from $593 to $494, or 16.7 per cent. This private automatic exchange provides two central office trunks, six stations, and one local link. Federal representatives stated the 6E PABX was selected to initiate the plan because it offers operating companies—large and small—"a means of readily providing improved service for many of their subscribers in such groups as retail establishments, busi-

(*Please turn to page* 74)

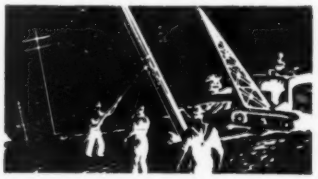
Better Service

FOR LESS MONEY WITH U·S·S AMERTEL 135

1. Greater Strength—2½ times that of B.B. grade wire.

2. Withstands heavier ice and wind loads.

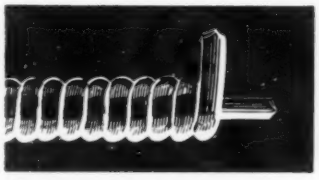
3. Makes longer spans possible.



4. Lowers construction cost — only half the poles needed.

5. Lower maintenance costs—greater strength means fewer breaks.

6. Has greater transmission efficiency at voice frequencies.



7. Special galvanizing means longer life.

8. U·S·S American Armor Rods reduce vibration — prevent breaks.

Write for complete technical data on U·S·S Amertel 135 Telephone and Telegraph Wires.

AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA STEEL COMPANY, SAN FRANCISCO
PACIFIC COAST DISTRIBUTORS
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SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

AMERTEL
TELEPHONE & TELEGRAPH WIRE
UNITED STATES STEEL

In an emergency "FLOTROL" is best

Model 1Z00-B
24 Amp., 48 Volts
Relay Rack mtg.
Size 23x15x45½"

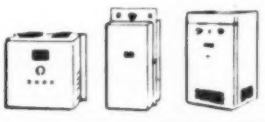
No more anxious moments when the commercial power fails because FLOTROL guarantees—"Every cell packed with energy to carry the load through the emergency."

What's more, that FLOTROL characteristic "Built for Heavy Duty" will automatically "step up" the charging rate when power is restored. Your battery will be fully charged in less time with FLOTROL.

Check these features —

1. Maintains full reserve battery capacity at **all times!**
2. Responds instantaneously to load requirements.
3. Lets battery rest on normal load; handles full load up to name plate rating.
4. Rugged design permits charging current to exceed name plate rating by as much as 75%!
5. Self-protecting on overloads.
6. Heavy duty rectifiers assure long, trouble-free life.

Ask your distributor about FLOTROL



Flotrol units are available in the following sizes:

Single Phase			
½ amp		1.5 amp	
1 amp		3.0 amp	
3 amp	24 volts	6.0 amp	50 volts
6 amp		12.0 amp	
12 amp		24.0 amp	

Three phase units in 25, 50, 75, and 100 amp 50 volt ratings.

Ask about the Dual Range Models.

Write for free copy of Bulletin No. 137.

FLOTROL
PARTNERS IN DEPENDABILITY
SUB-CYCLE

LORAIN PRODUCTS CORPORATION • DEPT. C
1122 F ST., LORAIN, OHIO

OLIVER

TELEPHONE LINE

BRACKETS

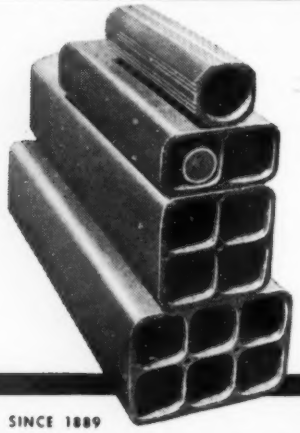
FROM THE COMPLETE LINE OF OLIVER POLE LINE MATERIALS

You will find all types and sizes of brackets required for telephone work in the complete Oliver line. Some of the popular styles are illustrated. Various types suit the practices and requirements of leading telephone, telegraph and railroad companies. For full details see Catalog 43.

OLIVER IRON AND STEEL CORPORATION

South Tenth and Muriel Streets · Pittsburgh 3, Pa.

MAKERS OF POLE LINE MATERIALS SINCE 1894



SINCE 1889

NATCO

CLAY CONDUIT

The proved and standard Protection for Underground Telephone Cables.

Cheapest in the long run. Highest quality and a full line of shapes.

National Fireproofing Corp.

202 E. OHIO STREET, N. S.
PITTSBURGH, PA.

Engineering
Construction
and
Maintenance
of
Outside
Telephone
Plants

Let's discuss your problems
We can handle any job —

NEALE
CONSTRUCTION CO.
Topeka, Kansas

Suppliers

(Continued from page 72)

ness offices, small plants, and large homes."

According to Federal the substantially reduced prices, which Federal will announce to the industry from time to time, are brought about through "increased plant capacity, modern mass production methods, quantity purchasing, standardized engineering, and low-cost factory-to-customer selling." From the standpoint of price reductions alone, Mr. Denney said, the Federal plan should have a far-reaching influence on the progress of the telephone industry.

Under the new method of purchase included in Federal's plan for simplifying urgent supply problems, any offered unit will be shipped to any point in the United States on a 60-day trial basis, if desired by the customer. "This liberal trial interval," Mr. Denney stated, "affords operating companies ample opportunity to check the performance of a unit and observe its revenue-producing possibilities—without cost to them. Unless company or subscriber tests are completely satisfactory, the trial unit may be returned at Federal's expense and no charge will be made."

As one of the primary objectives of the Federal plan is to eliminate many of the profit-consuming delays experienced by operating companies, all products offered under the plan will, for the most part, be available for quick delivery—direct from factory stock.

Following the offer of Federal's 6E PABX, other telephone products providing facilities in high demand by operating companies will be made available—at published prices—under the terms of Federal's three-point selling plan.

R. M. Waggoner Promoted to Directorship of Hubbard and Co.

Hubbard & Company, Pittsburgh, Pa., has announced the election of Raymond M. Waggoner to the vice presidency in charge of National Sales and to the board of directors. For the past 13 years Mr. Waggoner has been sales manager of the Hubbard Chicago plant territory. Prior to this responsibility he was assistant sales manager of the Northwestern Territory of the Hubbard Pittsburgh Plant from 1928 to 1936. Mr. Waggoner is well known

Federal ANNOUNCES ITS 2ND REVENUE-PRODUCING EQUIPMENT

OFFERED TO THE TELEPHONE INDUSTRY UNDER FEDERAL'S

Direct to Customer Selling Plan

FOR MEETING URGENT EQUIPMENT PROBLEMS

Federal's 9-H-1 SHORT HAUL CARRIER TELEPHONE SYSTEM

Especially designed to meet the service requirements of independent operating companies—large and small

FEDERAL'S 9-H-1 Carrier System is the low-cost solution to the problem of providing *more* toll circuits—*without* the expense and delay of new line construction. One, two, or three 9-H-1's (each an independent circuit) can be used on a *single* open wire pair. The equipment's highly attractive price makes it ideal for lines *as short as 5 miles*. It offers a flexible system that can *grow* as your traffic increases! Loss of revenue due to shortage of toll circuits can be stopped by acquiring this equipment under Federal's Direct-to-Customer Selling Plan. Here is the interesting basis on which Federal's compact, versatile, quality carrier is offered:

1 PLAN A: Priced as low as $660 per terminal (first channel) FOB Clifton. Two terminals required per channel. This price is below that of other available equipment providing comparable facilities.

PLAN B: Federal will lease this equipment, if desired, for 36-month periods.

2 60 DAYS' TRIAL, IF DESIRED, to prove performance and revenue-producing possibilities. Unless performance meets your requirements, the equipment may be returned at our expense—and no charge will be made.

3 IMMEDIATE DELIVERY on standard equipment. Deliveries can be arranged to meet your requirements for special systems.

OUTSTANDING ADVANTAGES:

- **COSTS LESS than 5 miles of new line on present poles**
- **SMALLEST SIZE—occupies only 7" of vertical rack space**
- **COMPACT—completely self-contained unit**
- **EASILY INSTALLED on table, wall, standard relay rack or pole**
- **OPTIONAL STRAPPING added and tested in factory**
- **STACKABLE up to 3 channels for each existing line**
- **BUILT-IN DIALING—local or toll with full supervision**
- **RANGE—approximately 150 miles for first channel**
- **FLEXIBLE—adaptable for ringdown, common battery or dial operation**
- **COORDINATES with other carrier telephone systems**

The following associated equipment is available if required to complete your installation

Mounting—Table, per terminal $30.00
Wall, per terminal 21.00
Wide choice of low-cost or standard relay racks . . . . . Prices on Request

Federal W241-22 Filter Panel per Group I-equipped with two Group II filters to transfer up to three channels from one circuit to another or around drops 172.00

Instruction Book . . . . . No Charge

Federal Type 906 Bridging Filter—to prevent mutual interference between carrier and bridged party line stations or branch lines $33.50

Relay Applique Circuits to adapt switchboard dialing circuits to carrier operation: When such are required—and upon receipt of full engineering details—Federal will design them to suit your local conditions. Prices on Request

Set of spare tubes and fuses 3.50

All prices subject to change without notice

Act Now! 1, 2 or 3 new circuits can quickly be yours under Federal's Direct-to-Customer Selling Plan!

Tell us your requirements and line facilities—or request a copy of our "Carrier System Data Questionnaire". Write to Telephone Sales Department.

Federal Telephone and Radio Corporation

FEDERAL TELEPHONE & RADIO — FTR — An IT&T Associate

100 KINGSLAND ROAD, CLIFTON, NEW JERSEY

In Canada: – Federal Electric Manufacturing Company, Ltd., Montreal, P. Q.
Export Distributors: – International Standard Electric Corp. 67 Broad St., N. Y.

What's *really* NEW in Telephony?

Take down from the bookshelf the latest volume on telephony and much of it will already be outdated—was, in fact, before it was ever published—for the science of telecommunications is constantly undergoing improvement and change.

Our research engineers are always one step ahead of accepted telephone technique. This must be so, because our discoveries arising from patient experiment and research become the acknowledged standards of tomorrow.

Thus the manufacturing processes of the whole range of British-made Strowger automatic telephone equipment—from units of the smallest size to complete area networks—are constantly being revised to bring them into line with most recent developments.

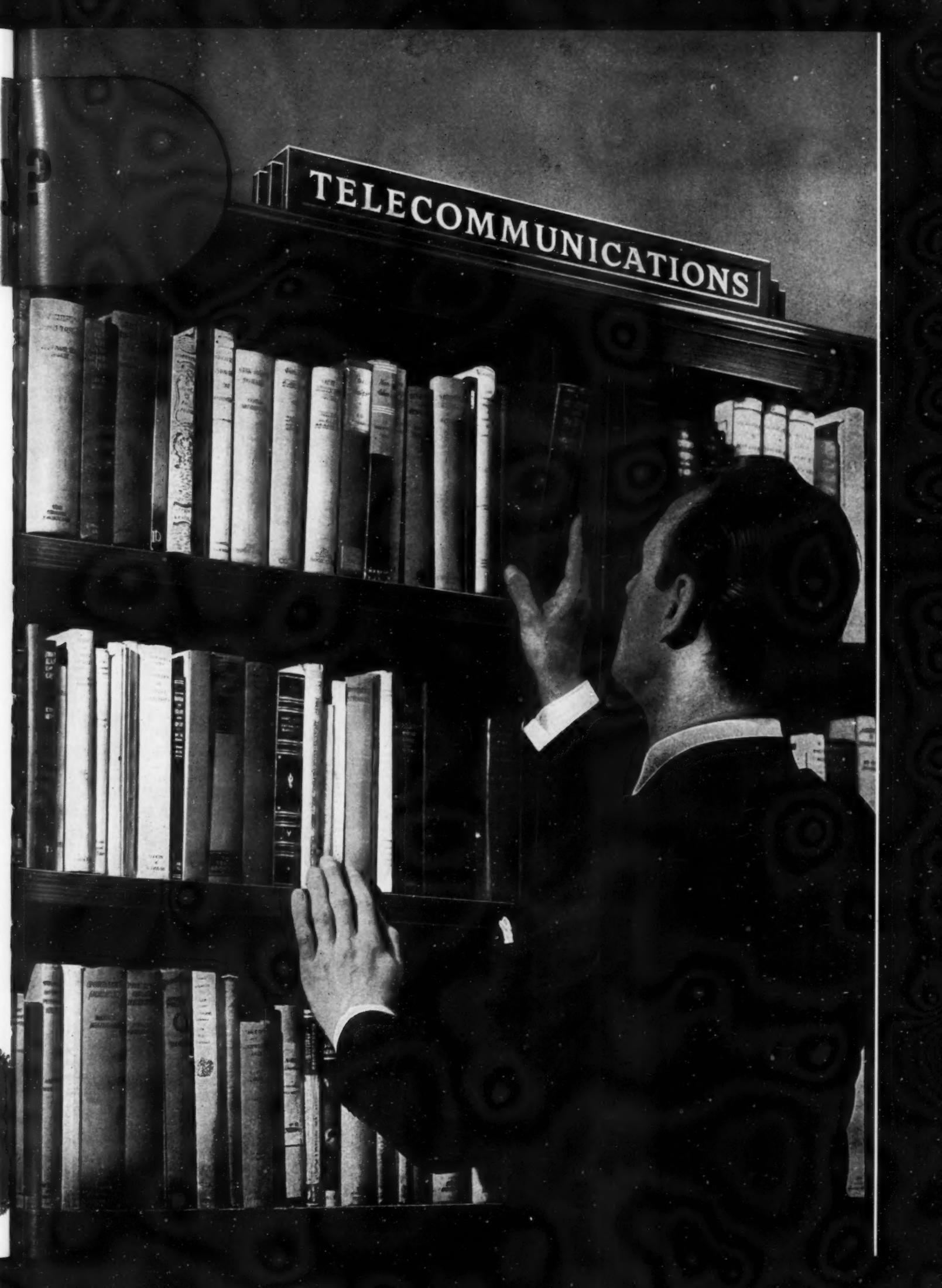
It is this assurance of receiving the most up-to-date equipment, coupled with adaptability and lasting efficiency, which makes Strowger automatic telephone equipment the choice of so many telephone authorities throughout the world.

STROWGER Telecommunications Equipment

AUTOMATIC TELEPHONE & ELECTRIC CO. LTD

Export Dept: Norfolk House, Norfolk Street, London, W.C.2 Cables: Autelco, London
Strowger Works, Liverpool, 7, England

A7463-AZ2


TELECOMMUNICATIONS

MALLEABLE IRON *gives*

ALBION-DILLON ANCHORS

Lasting Strength

IMMEDIATE DELIVERY

R.E.A. APPROVED

You can depend on Albion-Dillon Anchors for long, reliable service. For A-D Anchors are made from high-strength Malleable Iron, the material of high tensile strength, toughness and corrosion resistance. This means that A-D Anchors have *lasting strength,* an all-important feature.

This new R.E.A. approved expanding type anchor has three exceptionally long blades that dig into undisturbed earth—*and lock,* when fully extended—to provide maximum holding power.

Three sizes—3", 4" and 6", with two variations of blade spread available in the 6" size — are ready for *immediate delivery.* Rods are not supplied. Order through your distributor or write direct to us for specifications and prices.

A-D ANCHORS ARE EASILY INSTALLED

Blades are tied with a light wire to hold them together (see photo). A rod is attached and anchor dropped into hole dug to anchor size. A few blows on anchor top with spud will break wire and start blades digging in. Additional blows force blades deeply into solid earth until they're locked in open position.

Send for New Folder...

with specifications, illustrations and full information

ALBION MALLEABLE IRON CO.
"One of America's Foremost Producers of Malleable Iron"
ALBION, MICHIGAN

RAYMOND W. WAGGONER

from coast to coast, having been identified with Hubbard & Company sales for the last 26 years. . .

R. L. Sommerville Named Exide's Asst. General Sales Mgr.

Appointment of Robert L. Sommerville as Exide's assistant general sales manager has been announced by Roland Whitehurst, vice president in charge of sales. Mr. Sommerville was manager of automotive sales.

Mr. Sommerville, who has been in the employ of The Electric Storage Battery Company for 30 years, brings to his new position a long and wide experience of the battery business from both the engineering and the merchandising angles.

Mr. Sommerville's connection with Exide began in 1919 when he was employed as a salesman in the New York Branch. Five years later, he was placed in charge of automotive sales in the Branch. In 1932 he was promoted to manager of automotive replacement sales at the company's general offices in Philadelphia. In 1942, Mr. Sommerville was appointed manager of automotive sales—a new division embracing all automotive, aircraft and radio battery sales.

Mr. Sommerville has been extremely active in industry affairs and currently is Chairman of the Statistical Committee of the Association of American Battery Manufacturers. He was formerly Chairman of the Merchandising Division of the A.A.B.M.; Chairman, Manufacturers Board of Governors, N. S. P. A.; Secretary and Director of M.E.M.A.; has served as alternate on the Battery Advisory Committee to the War Production Board, and as chairman of a battery industry committee to U. S. Army Ordnance.

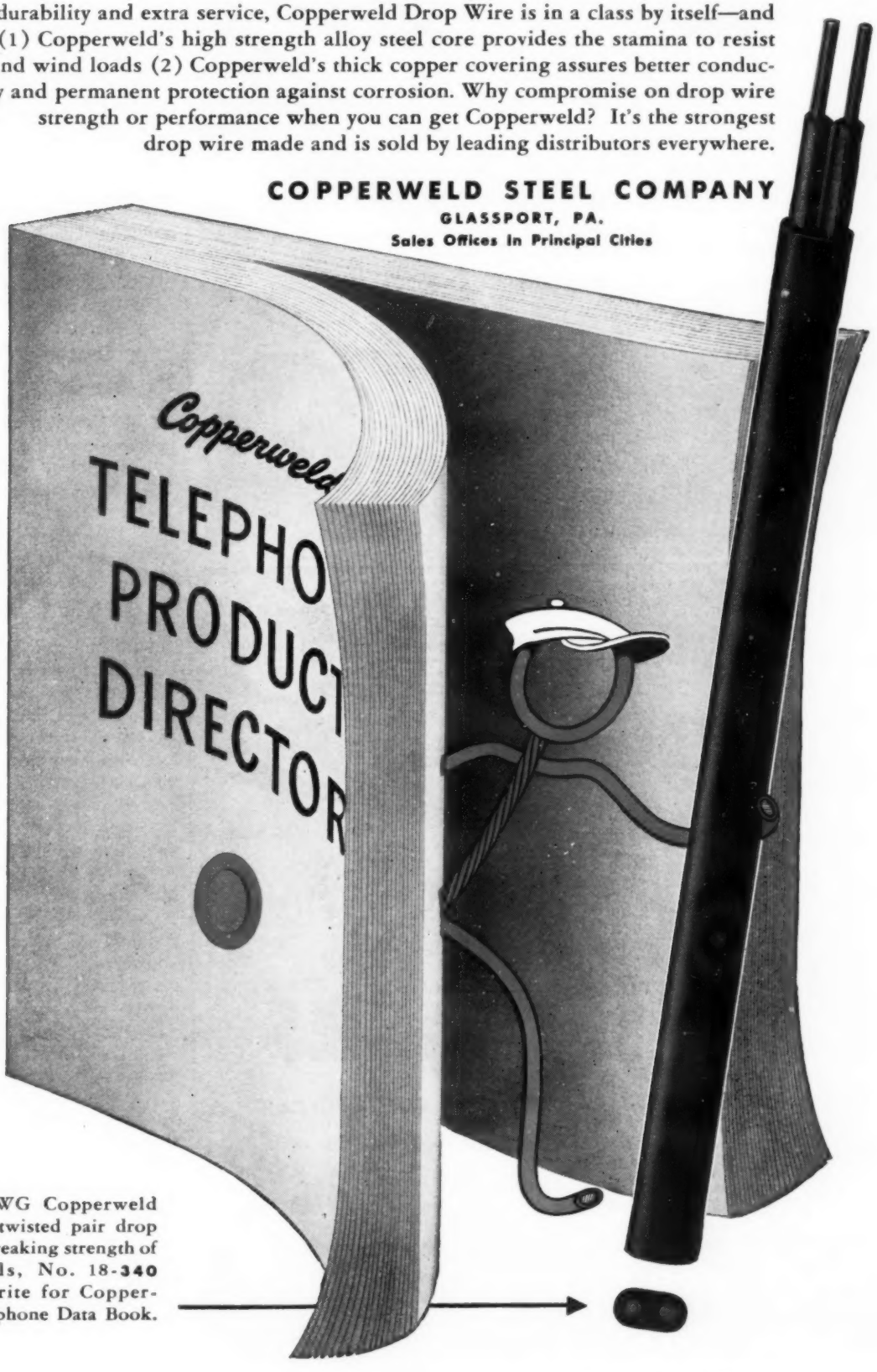
LOOKING FOR DURABLE DROP WIRE?

HERE'S Copperweld
TRADE MARK

—THE STRONGEST DROP WIRE MADE*

For durability and extra service, Copperweld Drop Wire is in a class by itself—and here's why: (1) Copperweld's high strength alloy steel core provides the stamina to resist heavy ice and wind loads (2) Copperweld's thick copper covering assures better conductivity and permanent protection against corrosion. Why compromise on drop wire strength or performance when you can get Copperweld? It's the strongest drop wire made and is sold by leading distributors everywhere.

COPPERWELD STEEL COMPANY
GLASSPORT, PA.
Sales Offices in Principal Cities



*No. 17 AWG Copperweld parallel or twisted pair drop wire has a breaking strength of **400** pounds, No. 18-**340** pounds. Write for Copperweld's Telephone Data Book.

KLEINS
FOR MEN WHO WANT
the Best

There's a reason why Klein tools are rated "best" by pole line crews. Klein tools have proved they can "stand the gaff"—stand up under hard, everyday use. For tools that **won't** fail, experienced linemen specify "Klein's."

KLEIN TOOLS EST. 1857

RECOMMENDED AND DISTRIBUTED BY

AUTOMATIC ELECTRIC
SALES CORPORATION

1033 WEST VAN BUREN STREET, CHICAGO 7, ILL.

PENTA POLES

FULL LENGTH TREATED NORTHERN WHITE CEDAR

They are pleasing in color
— neat in appearance.

P&H

PAGE AND HILL, INC.
MINNEAPOLIS, MINNESOTA · 50 CHURCH STREET, NEW YORK, N. Y.
"STILL IN THE LEAD"
Distributed by AUTOMATIC ELECTRIC SALES CORPORATION STROMBERG-CARLSON COMPANY

Arthur M. Hill Elected IT&T Board Member

Arthur M. Hill, who resigned December 15, as chairman of the National Security Resources Board and as a member of the National Security Council, has been elected a member of the Board of Directors of International Telephone & Telegraph Corp.

Mr. Hill has been on a leave of absence from his duties as chairman of the Executive Committee and Director of the Greyhound Corporation, and as an official of a number of other companies, since the summer of 1947, when he was named to head the Resources Board.

Mr. Hill is president of the National Association of Motor Bus Operators, and a member of the Board of Governors of the National Highway Users Conference.

Exide Announces Manchex Battery

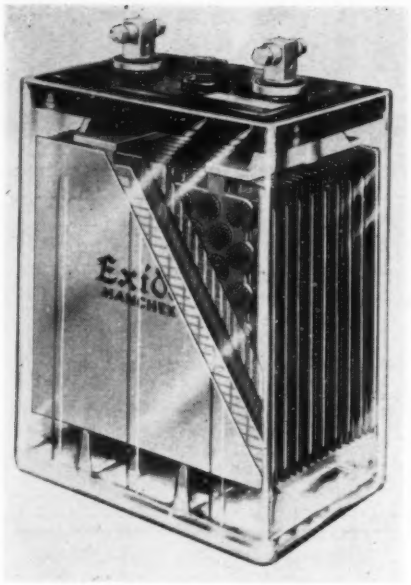
Embodying a number of exclusive improvements in storage battery design, a new battery known as the Exide-Manchex has been announced by The Electric Storage Battery Co., Philadelphia, Pa.

This new product of Exide is of the sealed glass jar type and applicable to all types of stationary power in electric utilities, railway signaling, telephone, emergency power and lighting, rural electrification and other general applications where exceptional long battery life is desired.

The manufacturer states unusually long life, low maintenance cost, improved electrical characteristics, increased power output per unit of space, less weight per ampere hour output, and attractiveness of appearance, are the principal features of the Exide-Manchex.

One of the exclusive features of the Exide-Manchex is the positive plate known as the manchester type. This plate, developed from the experience of over 50 years of service, consists of a grid cast of a lead antimony alloy in which the active material is in the form of pure lead buttons. These buttons are forced by hydraulic pressure into circular openings in the grid. The manufacturer states this form of active material does not wash away and is an important reason for the long life of the manchester plate.

The "Permanized" negative plate is constructed of a lead antimony grid or framework with a series of vertical ribs connected by short horizontal bars. These bars, which are flush with the plate surface, extend only part way



Exide-Manchex storage battery features number of exclusive improvements.

through the plant and are staggered on opposite sides. The active material is in the form of strips or ribbons of sponge lead, extending from top to bottom of the plate between the ribs and locked in position by the horizontal bars.

The separators are of specially treated wood, teamed with low resistance slotted plastic separators; a combination that provides proper insulation between plates and assures high discharge characteristics under all operating conditions.

Excellent high rate discharge characteristics are obtained from these cells because of the heavy terminal posts equipped with copper inserts (except in the three smaller size cells) and the heavy straps between the plates and terminal posts. These same cells are also equipped with another Exide feature—namely, a burned ring seal where the post is fitted through the cover. This permanently seals the opening around the posts and eliminates electrolyte seepage.

The molded glass jar in which the Exide-Manchex is assembled is another exclusive feature of the new battery. In design, uniformity of dimensions, strength and quality of glass, it provides a compact and neat assembly making for ease of inspection and maintenance. Deep seal covers are made of tough rubber for trouble-free service.

The Exide-Manchex is available in a wide variety of sizes and capacities, from 40 to 960 ampere hours.

An illustrated catalogue can be obtained by writing to The Electric Storage Battery Company, 19th Street and Allegheny Avenue, Philadelphia 32, and asking for Form 4852.

ALPHADUCT WIRES

FOR *All* TELEPHONE REQUIREMENTS

LONG LIFE

Neoprene Jacketed
Drop and Bridle Wire

Weatherproof Braided Drop and Bridle
Interior - Tree - Ground - Switchboard -
Pothead - Cable Terminal - Instrument

Manufactured and Tested to Rigid Specifications

ALPHADUCT WIRE & CABLE CO.

Milltown, New Jersey Telephone: Milltown 6-0030

CRAFTSMAN SERVICE BODIES Model 75 & 90
FOR BETTER UTILITY SERVICE

"CRAFTSMAN" all steel service truck bodies are designed specifically to meet todays installation and maintenance service requirements for a compact service unit that will conserve time and manpower.

MODEL No. 75 for installation on 1/2 ton chassis

MODEL No. 90 for installation on 3/4 to 1 ton chassis

Optional Extra Equipment available: Wire Reels, Sliding Steel Roof, 3 Types Overhead Ladder Racks, Extension Ladders.

Write for Bulletin "A" describing Model No. 75 and No. 90
Write for Bulletin "B" covering Utility Ext. Ladders.

ARTISAN PRODUCTS, INC.

3540 West 140th Street **Cleveland 11, Ohio**

THE CLEARING HOUSE

For the Convenience of readers of Telephone Engineer

Cedar Poles
MAC GILLIS & GIBBS COMPANY
Wells Bldg., Milwaukee 2, Wis.
★ ★
Northern White and Western Red Cedar Poles—Plain or Butt-Treated

CYRUS G. HILL
ENGINEERS
ALLEN K. HAMILTON
Plant—Traffic—Commercial
Valuations and Original Cost
231 S. LaSalle St., Chicago 4

RECONDITIONED EQUIPMENT
Kellogg No. 801 Steel Wall Sets, Common Battery. Any type Ringers, at $8.00.
Kellogg No. 118 Stands, No. 600 type Ringer Boxes, complete desk sets. Common Batt., at $8.00.
Kellogg No. 118 or 84 type stands, complete at $5.00.
Brand New, W. E. No. 47 Plugs, at 50c each.
INDEPENDENT TELEPHONE REPAIR CO.
1432 West Fifteenth St. Chicago 8, Ill.

SPECIALISTS ● Our 42nd. Year
TELEPHONE FORMS
PRINTING • PLANOGRAPHING
YOUR ORDERS RECEIVE PROMPT ATTENTION
CULLOM & GHERTNER CO.
308 5th AVE., N. NASHVILLE 3, TENN.

SLOAN, COOK & LOWE
CONSULTING ENGINEERS
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Appraisals—Original Cost Studies
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TELEPHONE FUSES REPAIRED
Cook A7—and other Wood Fuses.....$.05
Cook A12—and other Porcelain Fuses 06
W.E. 35 Types Indicator Alarm 08
A.E. Indicator Alarm 06
W.E. 11C—Cook A52—R.E. Co. 44-52-55.....08
We also repair
Generators—Relays—Keys—Induction Coils—Protector Assemblies and Cable Terminals
TELEPHONE REPAIR SERVICE
Box 342 Williamsport, Pennsylvania

Chemical Dehydrators
Automatically controlled, using flake calcium chloride for preventing dampness and condensation in automatic totally enclosed telephone exchanges.
The H. J. Kaufman Co.
13215 Roselawn Ave., Detroit 4, Mich.

JAY G. MITCHELL
CONSULTING ENGINEER
APPRAISALS—COSTS—PLANT
7720 SHERIDAN ROAD CHICAGO
BOX 523 EVANSTON, ILLINOIS

CLASSIFIED ADS

Help Wanted

HELP WANTED: Permanent employment available for a competent combination local exchange manager, a telephone inspector, a line construction foreman, and a cable splicer. Opportunity for advancement in a company with 66 separate exchanges and 62,000 stations. Apprentice training program provides special advantages to ex-service men. Advise qualifications in applying to Fred G. Williamson, Plant Superintendent, Northern Ohio Telephone Company, Bellevue, Ohio.

HELP WANTED: Switchmen, automatic or manual. Could use apprentice with two years or more training. Make application giving complete details, telephone experience, marital status, etc. Write Ohio Consolidated Telephone Company, 824 7th Street, Portsmouth, Ohio.

HELP WANTED: Experienced telephone lineman at once. Central Telephone Company, Clear Lake, South Dakota.

HELP WANTED: Man to maintain North all relay common battery and magneto equipment. One who has had plant experience and the ambition to work up to Assistant Manager, with growing Independent company. Write Box No. 8609 c/o Telephone Engineer.

HELP WANTED: Plant Superintendent for operating group in Eastern Pennsylvania. In your reply, please state qualifications, age, necessary wage, and if possible attach a small photograph. Write Telephone Engineer Box No. 8599.

HELP WANTED: Cableman and Linemen by Midwestern Class A telephone company. Opportunity for permanent employment and good wages. Give age, experience, etc. Write Box No. 8608 c/o Telephone Engineer.

HELP WANTED: Experienced Commercial Manager. Permanent position. Good Salary. Splendid future. Write complete details as to experience and background. Enclose snapshot or photograph. Write or call Elyria Telephone Co., Elyria, Ohio.

Write Today for Your Copy . .
Bashlin's new bulletin giving full details on Linemen's Safety Equipment is ready for you . . . a complete line from which to choose, and every one a champion. Write today!
W. M. BASHLIN CO. **Grove City 1, Pa.**

CABLE-SPLICERS' WIPING CLOTHS

WIPING THE VERTICAL JOINT
Showing the up-right cloth in action.

Formed-flexible finishing cloths (Patented); Flat finishing cloths; Catch cloths; Crotch cloths and Up-right joint catch cloths. Made of world-prize HERRINGBONE TICKING or Imported English MOLESKIN. If your jobber cannot supply you write us for literature and prices.
GEO. E. WILLIAMS, *Mfr.*
3035 ALDRICH AVENUE, MINNEAPOLIS 8, MINN.

Prices Reduced

January Clearance Sale
Miscellaneous Items

Pole Trailers, Utility type, 2½ Ton without brakes $395.00

Pole Trailers, Utility type, 2½ Ton with electric brakes, 900x20 10 ply tires, all prices FOB Forty Fort, Pa. 695.00

Two, Good, Used, Jacques Hydraulic Controlled Earth Boring Machines, Reconditioned, with 16" Rock Auger, 100 H. P. Ford V-8 Engines, Reconditioned motors—ea. 2500.00

Wrench, Linemans—ea. ..... .75

Pike Poles, 12 Foot—ea. 3.00

Pintle Hook, Large—ea. 12.50

Pintle Hook, with bracket—ea. 18.00

Climbers, 15½-16½-17-17½, with straps & pads, new—ea. 3.50

Belts, Lineman, for tree work, short sizes—ea. 2.50

Belts, Linemans—ea. 3.50

Belts, Safety, Long—ea. 4.50

Belts, Safety, Short—ea. 2.00

Shovel, Square, Long Handle—ea. 1.00

Grip No. 1, (Same as Klein 1613-30) —ea. 2.00

Soap, Hand, Klex, Bars—Box of 100 ..... 5.00

Pump, Fire, Darley, Type F, suitable for mounting on front end of trucks driven with power takeoff from front end drive, new, capacity 500 GPM—ea. 100.00

Fire Extinguishers, Dugas, All-Out, gasoline fire—ea. 19.50

Fire Hose, 2½" Diameter, 50ft length with both male & female connections, new, packed 4 lengths to box ..... per ft. .50

Wood Cob & Pins for telephone cross arms. (Same as Seyler 7010)—ea. ..... .15

Three bolt Clamps. (Same as Seyler 6403) takes bolt ½" size 5¾ x 1 9/32—ea. ..... .35

per 100 ..... 32.50

Brace, Wood Boring—ea. 4.89

Roller, Cable, Single sheave—ea. 2.75

Bolt Cutters No. 1—ea. 4.50

One, Highway H. D. Model, packed in original crate ..... Will Quote

Special discount on model H. D. Highway Parts

SERVICE: During the past 2½ years we have specialized in sales and service of Earth Boring Machines. We will make every effort to help with servicing and repairing machines on which we have had experience. Give us a trial.

WYOMING VALLEY EQUIPMENT CO.

W. G. ARNOLD, Exec. Vice President
1089 Wyoming Avenue
Forty-Fort, Wilkes-Barre, Penna.
Phone Kingston 7-6400

For Sale

FOR SALE: 300 line Kellogg magneto switchboard equipped with 15 keys on each position; 245 combination shutter type jacks and drops and protectors; also a Leich straight line ringer just as it came out of service. Make us a bid. Cox & Warner, Cookeville, Tennessee.

FOR SALE: 200 magneto wall-sets, compact type, serviceable condition. Inquire: The Lincoln Telephone and Telegraph Co., Lincoln, Nebraska.

FOR SALE: 1946 Willys Jeep equipped with continental digger in very good condition, priced reasonable. Write Telephone Engineering & Construction Co. 3140-29th Ave. South, Minneapolis, Minnesota or telephone Drexel 5520.

FOR SALE: Good telephone property. Group of 5 exchanges. One is common battery, two are dial and two magneto. Located in Tennessee, in Tennessee Valley. Own all toll lines. 570 stations. Annual gross revenue after settlement with Bell Company $28,000. Priced reasonable. Write Box No. 8611 c/o Telephone Engineer.

BUCKEYE

For a Quarter of a Century Rebuilder of the Independents' Telephone Equipment.

FOR RECONDITIONED TELEPHONE AND SWITCHBOARD EQUIPMENT

Depend on

Buckeye Telephone & Supply Co.
COLUMBUS 6, OHIO

Want Ad Rates

THE RATES for this department are as follows: 15c a word, cash with order, please. Box number service if desired. Address all correspondence to: TELEPHONE ENGINEER PUBLISHING CORPORATION, 7720 Sheridan Road, Chicago 26, Illinois.

AMERICA'S LARGEST WAR SURPLUS STORE
ALL SHIPMENTS F.O.B. PHILADELPHIA

U. S. Army
LINEMEN'S SET
Complete Set **2.95**

* Body Belt . . . 3½" sturdy, durable web belt with drop-forged buckles.
* Plier Pouch . . . sturdy webbing attaches to belt.
* Safety Belt . . . 2" heavy web strap. Adj. to 80". Drop-forged snaps.

U. S. Army Signal Corps
SPUR SET
Climbers and double straps in set. Sizes 16½ and 17.
3.00

U.S. Army Signal Corps
INSULATING RUBBER TAPE TL-192
¾" x 15' per roll. Mfg. by U. S. Rubber. 6 rolls to each can. Each roll tin-foil wrapped. VACUUM PACKED . . keeps ea. roll perfect indefinitely.
$1.29 per 6 roll can
$15 per case of 15 cans

U. S. Army Signal Corps
FRICTION TAPE
¾" wide, approx. 83'. VACUUM PACKED for perfect protection indefinitely.
$1.65 per 6 roll can
$22.50 per case of 15 cans

U. S. Army Signal Corps
Electrician's PLIERS, KNIFE & CASE
Handy indispensable tools for electrician or electronics repairman. Sturdy case, attaches to belt, holds TL-29 knife, and 6" side-cutting pliers TL-13-A.
Estimated Govt. cost $5.75
Complete Set **2.65**
2 for 5.00

Used U.S.A. Signal Corps Equipment
Spur Sets—with straps & pads, leather..... $1.75
Electricians' Tool Belt—leather..... 1.75
Plier Pouch—leather ..... .10
Used—in good usable condition.

Brand New
EXTENSION LIGHT
Rubber cord, built-in switch, and receptacle. Rubber handle, metal guard.
25 ft. cord **$2.00**
50 ft. cord **$2.50**

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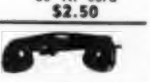

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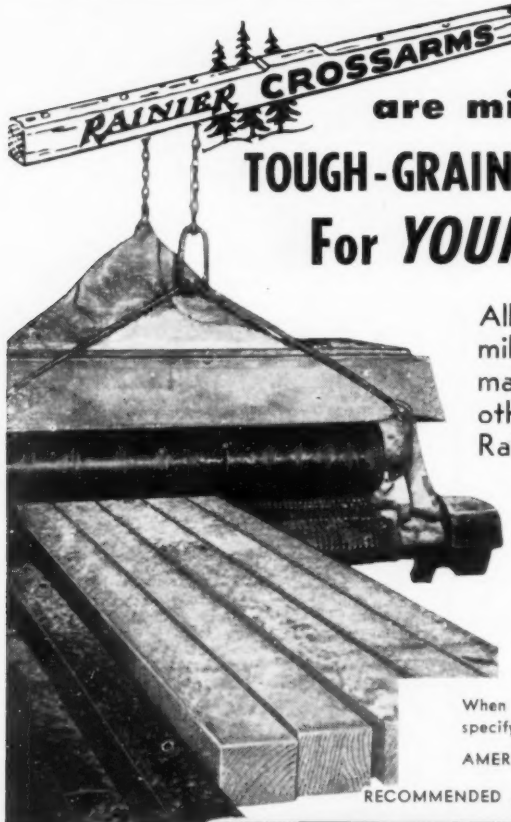

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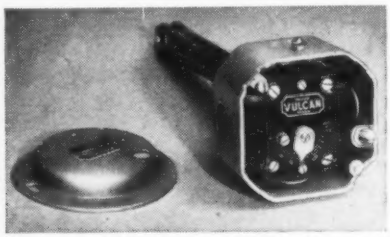
Vulcan Electric Develops Electric Immersion Heater

Vulcan Electric Co., of Danvers, Mass. has developed a thermostatically controlled electric immersion heater which can be connected to any hot water tank or boiler to provide electrically generated heat.

The heater is fitted with a bushing which has a one inch tapered pipe thread, which will fit standard domestic hot water boilers—or a 1¼" thread if desired—and a pilot light.

The manufacturer states installation is simple. The heater is inserted in the boiler and then connected to



Electric Immersion Heater

any convenient electric receptacle. The thermostat maintains the heat at any desired temperature, is adjustable and prevents danger of overheating.

In shops, factories, offices and stores, it offers the opportunity of providing hot water for washing and other purposes with a minimum of equipment and installation expense, as small tanks can be installed in wash rooms economically, while the cost of current is kept at a low figure by the thermostat control.

Phelps Dodge Announce Organization Changes

Wylie Brown, president of Phelps Dodge Copper Products Corp., has been elected chairman of the Board of Directors and will continue as chief executive officer of the Corporation according to a recent announcement.

Whipple Jacobs, formerly president of the Belden Manufacturing Co., Chicago, on January first joined Phelps Dodge Copper Products Corp. as president.

Mr. Brown has been president of the corporation since it was founded and both he and Mr. Jacobs are widely known in the copper industry.

Phelps Dodge Copper Products Corp. is one of the largest fabricators of copper in the world, with mills at Yonkers, N. Y.; Elizabeth, New Jersey; Fort Wayne, Indiana and Los Angeles, California.

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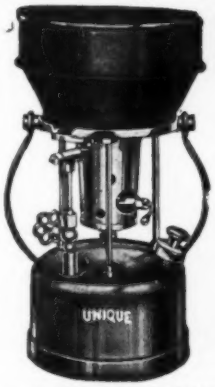

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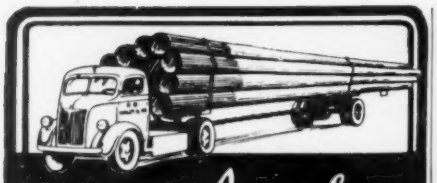

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THE BACK OF THE BOOK

By JOHN G. REYNOLDS
Managing Editor

Subscribers Pitch In . . . Approximately a year ago members of the Stephen (Minn.) Red River Telephone Co., led by president Pagnac and secretary Avery, decided to do something about their mediocre telephone service. The poor service was due to a multiplicity of things that 40 years of operation without adequate maintenance can bring. The lines had many rotted poles, literally thousands of poor joints, and no anchoring. Entrance of R.E.A. into the territory served by the telephone company clinched the decision to modernize their lines, as the electric parallels to the old single wire grounded system made two lines out of the company's three practically unusable.

A conference with Jim Ten Eyck Stephen, Minn , manager of the Northwestern Bell Telephone Co., brought into being a concrete plan for rebuilding the entire system. Statistics covering the project show what can be accomplished by a company that wants its service to rate with the best in the country.

The old line had 27 customers over 24 miles of pole line and 23¾ miles of 3-grounded circuits.

The present line has 38 customers served over 36½ miles of pole line and 113½ miles of 6 metallic circuits. No line now has over 10 customers.

Approximately 300 poles were set; 55 anchors were placed; 79¾ miles of new wire installed; 140 10-pin crossarms placed; every station was re-wired, and lightning arresters installed for protection. In short, a complete rebuilding job was undertaken which took time and money—and has resulted in a job that the Stephen farm folks can feel proud of—and one that will provide good dependable telephone service for many years.

Total cost of the project was estimated at approximately $6,000 with most of the actual labor done by Roy and Vernon Sundby, and others in the area. . . . We don't have a stock of orchids to pass out to deserving companies—but the work of the Stephen Red River Telephone Co. deserves the industry's applause.

• • •

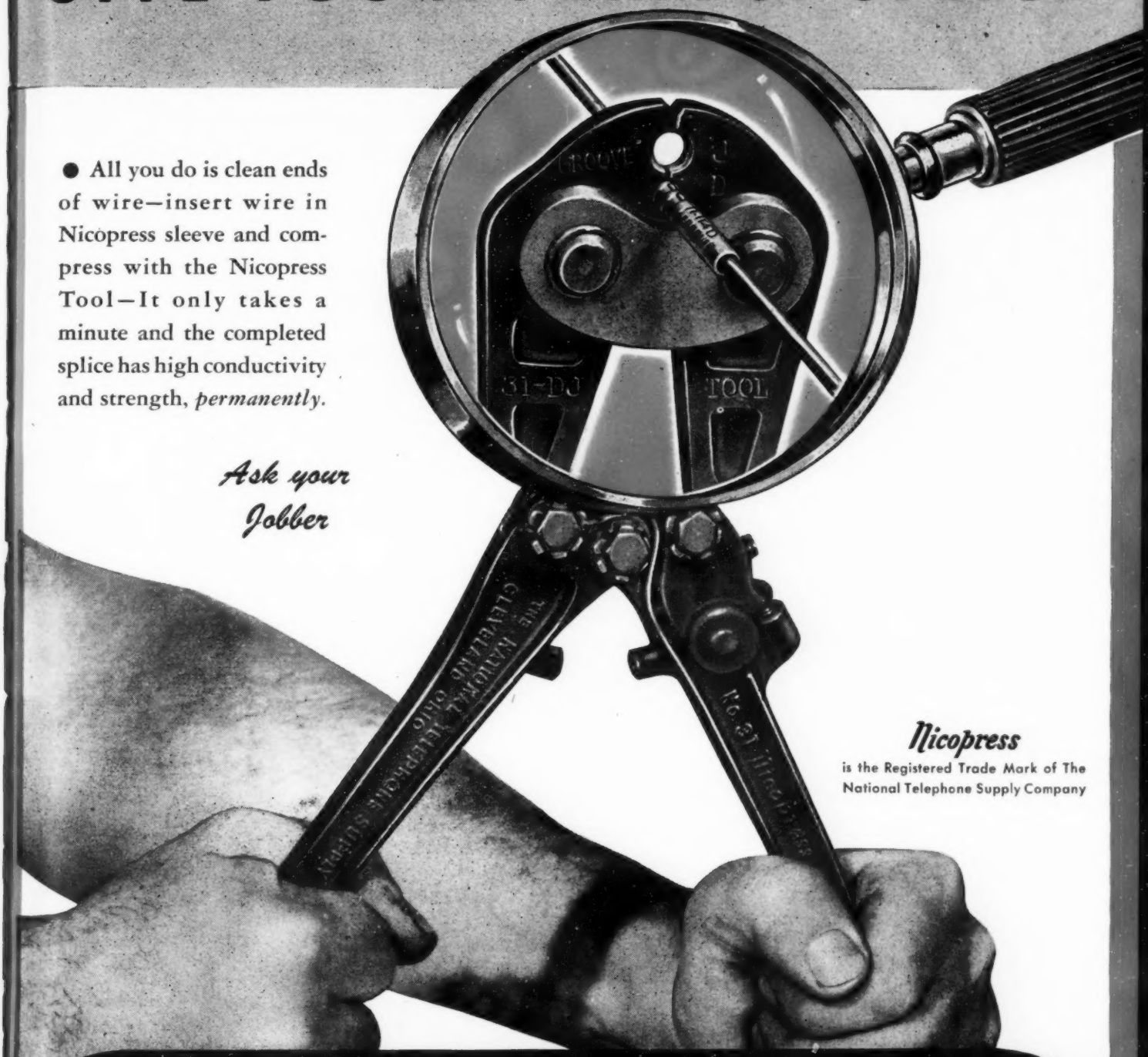
Dorval Island Accepts The Telephone . . . Dorval Island, is situated in Lake St. Louis on the St. Lawrence river only eight miles west of the great metropolis of Montreal. Yet so careful has the community been to retain the isolation of their lovely wooded retreat, that until last summer not even a telephone linked the island with the mainland.

Now, the Blue Bell reports, a public telephone booth has been set up on the landing stage for the use of residents, and that one booth seems sufficient for the islanders, who are anxious to maintain their independence of the city.

One of the smallest self-governing communities in Canada, the island has a mayor and five aldermen, elected every two years. Five well-trained volunteer fire brigades form a shield against the ravages of fire which, because of the still dense woods on the island, could bring disaster if allowed to get out of control.

The Blue Bell advises that in case any of you people are thinking of moving to this little-known retreat, "the community authorities warn that all available space for cottages is already in use."

THE *Nicopress* SLEEVE AND THE NICOPRESS TOOL GIVE YOU A PERFECT SPLICE



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